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PRACTICE-BOOK SERIES.

U. C. S.

UNVOCALIZED CORRESPONDING STYLE

WITH

KEY AND QUESTIONS.

New and Enlarged Edition.

BY

ANDREW J. GRAHAM, A.M., M.D.,

Author of Standard Phonography, and for many years Verbatim Reporter of Legislative, Legal, Political, Technical, Scientific, and Religious Matters; Editor of many volumes of Periodicals—from 1853 to 1893 (et seq., The Universal Phonographer, The Cosmotype, The Phonographic Intelligencer, The Visitor, The Student's Journal), devoted principally to Phonographic, Phonetic, and Reporting Matters; and Author of Brief Longhand, Synopsis of English Grammar, Phonographic Numerals, Etc., Etc.

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CONTENTS.

	PAGE
INTRODUCTION	iii
COPYING BOOKS IN MONASTERIES	5
OBITUARY OF HENRY FAWCETT	9
PRECIOUS OLD MANUSCRIPTS	15
HOW MUCH SLEEP?	20
MIRTH AS A MEDICINE	23
MANUFACTURE OF OPTICAL GLASS	29
CHECKED PERSPIRATION	33
ITEMS OF INTEREST	41
Law of Periodicity	12
American Inventions	13
Honesty	13
Riches	22
Education	26
Man	27
Quotation from Bailey	32
Coffee	41
Dr. Flint on Beef Tea	41
When and How to Read	41
Cocaine	42
Home Remedies	43
Growth of Children in Fever	43
Accumulation of Wealth in the United States	44
Railroad Accidents in the United States	44

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ITEMS OF INTEREST.—*Continued:* PAGE

Artificial Stone - - - - - - 44
Glucose - - - - - - - 45
Spiders - - - - - - - 45
Floating Bricks - - - - - - 46
ASIATIC CHOLERA - - - - - - - 47
THE TALLEST TREE IN THE WORLD - - - - 59
LEISURE HOURS - - - - - - - 63
LOVE OF APPLAUSE - - - - - - 65
SALT - - - - - - - - 69
LAMARTINE - - - - - - - 75
SCIENTIFIC MISCELLANY - - - - - - 80
Photography of the Stars - - - - 80
Domestication of the Horse - - - - 81
Number of Species of Flowering Plants - - 82
Copper, and Infectious Diseases - - - - 82
Experiments with Peat - - - - - 83
Balloon Experiments - - - - - 83
Cooling Buildings by the Heat of the Sun - - 84
Northeastern Siberia - - - - - 84
Mineral Wealth of Tonquin - - - - 85
A Perpetual Clock - - - - - - 85
Herr Brunner on Dynamo-Electric Machines - 86
THE MEASUREMENT OF TIME - - - - - 90
HOW TO SLEEP - - - - - - - 96
SAND - - - - - - - - 98
THE MILKY WAY - - - - - - - 108
LIBRARIES - - - - - - - - 110

INTRODUCTION.

The Exercises in the U. C. S. (Unvocalized-Corresponding Style) are intended for use after the pupil has gone through the First Reader, and are calculated to exercise him in vocalization especially, and in learning to read unvocalized outlines, as a useful preparation for entering upon the study of the reporting style.

To make a still nearer approach to the reporting style, these Exercises are in the *acs* (advanced-corresponding style), which is characterized—

1. By the use of *Mel*, *Nel*, *Rel*. (See the Hand-Book, §161, Rem. 2.)
2. By the occasional omission of unaccented vowels, and even accented vowels of well-known forms. (See Hand-Book, §239.)
3. By the considerable use of phrase-writing.
4. By the use of a few word-signs in addition to those of the corresponding style—such as are indicated in the Standard-Phonographic Dictionary after *ac;* such as the *h*-tick on the line for *he*.

The mode of using these Exercises should be as follows :

1. Read the phonography with but little reference to

the key; and when it can be read with great readiness, then—

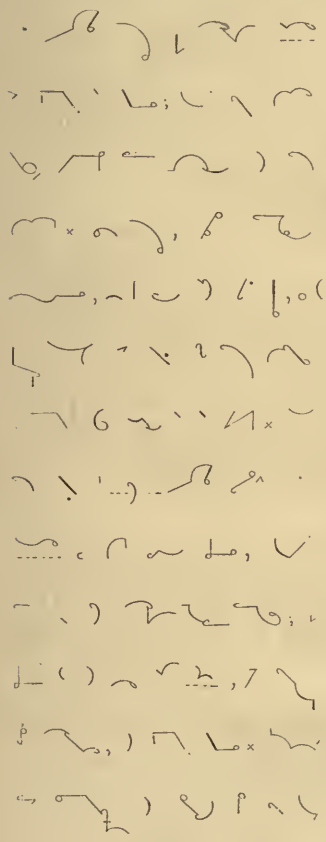
2. Copy and vocalize the outlines; answer the questions; and study carefully those portions of the Hand-Book suggested, or referred to by the questions — especially if you find your memory of the substance of the instruction is not perfect: the mere memorizing of the words is not insisted upon or valued. When you have familiarized the outlines by repeatedly copying and vocalizing them, then—

3. Test the thoroughness of your study and practice by writing each exercise from the Key, using the proper outlines, vocalizing them at first, then dropping all but the accented vowels, and even these at last.

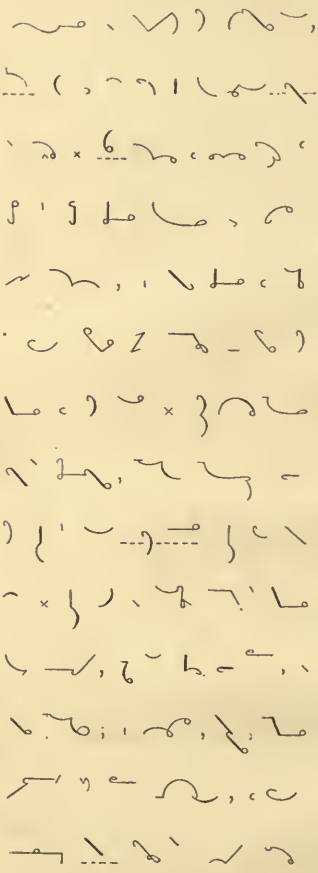
It is by no means intended that, in the vocalization, the student should vocalize the word-signs, contractions, prefixes, or affixes. This would be an error. To get those signs as familiar as possible, review each day the Lists in the Hand-Book, or in the Synopsis, or in the Little Teacher. The latter, a little pocket-size book, is very valuable in making such reviews, not only for its miniature size and portableness, but for its concise presentation and engraving of the Lists, and also for its brief presentation and illustration of the other chief corresponding-style principles.

COPYING BOOKS IN MONASTERIES.

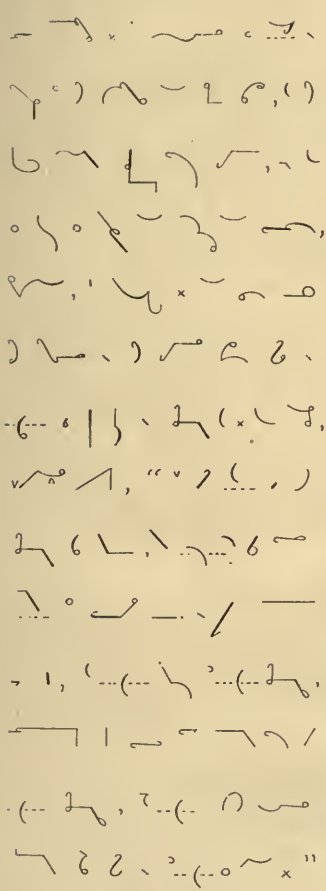
(The figures [1], [2], [3], etc., refer to Notes at the end of the text.)



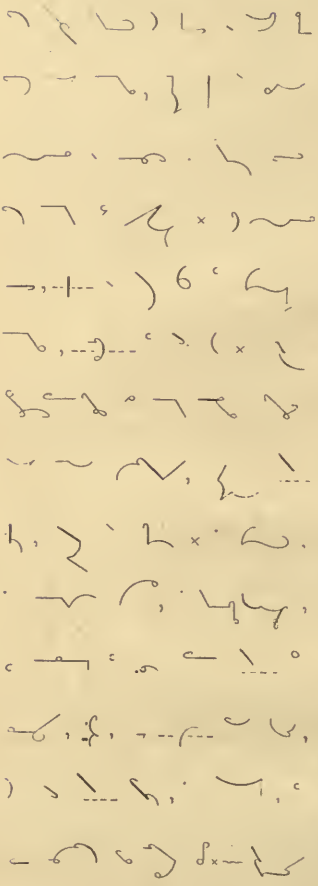
The religious orders had the monopoly almost[1] of the copying of books; for, the number of laymen possessing the requisite skill and learning[2] was very limited. Some orders, such as the[3] Carthusian[4] monks, made it one of their chief duties[5], as they depended entirely on the pay derived[6] from their[7] labors to keep themselves independent of all charity. In every abbey or other religious house the inmates were allotted certain tasks, varying according to their mental and physical qualifications[8]; but the task[9] that was most highly esteemed[10], and which provided constant employment, was copying books. A room called the scriptorium was specially set apart[11] for the



monks[1] to pursue their labors in, and here they would meet every day for a certain number of hours. These rooms were sometimes furnished[2] with stone or wooden desks, fixed to the walls round the[3] room, but before desks were introduced, the only supports on which the copyists[4] could place their books were their knees. There was always a fixed number of transcribers, and whenever a vacancy occurred through death or any other cause, it was filled[5] up immediately. It was usual to intrust the[6] copying of books for the choir, and those not demanding great skill[7], to boys and novices; but missals, Bibles, and books requiring the[8] highest skill and learning, were only executed by priests of mature years

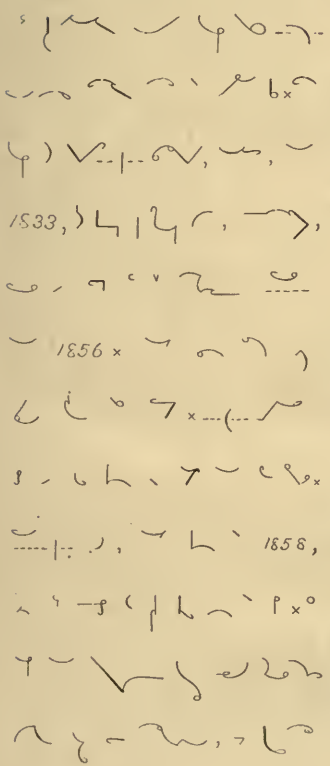


and great experience. The monks were enjoined to proceed with their labors in strict silence, that their attention might not be distracted[1] from their work, and to avoid as far as possible any errors in grammar, spelling, or punctuation. In some cases, authors prefixed to their works solemn adjurations to those whose duty it was to transcribe them. For instance, Irenæus wrote: "I adjure thee who shalt transcribe this book, by our Lord Jesus Christ, and by his glorious coming to judge the quick and the dead, that thou compare what thou transcribest, and correct it carefully according to the copy from which thou transcribest, and that thou also annex a copy of this adjuration[2] to what thou hast[3] written."

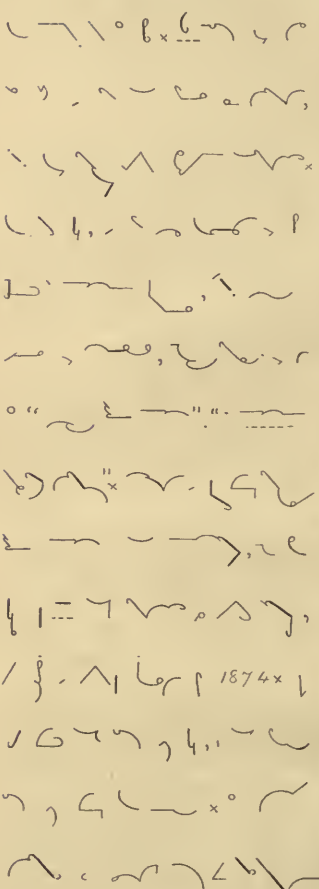


Every possible precaution was taken to ensure strict accuracy in the copies, and it was the duty of certain monks to examine and compare carefully every copy with the original. Other monks, again, had to busy themselves with illuminating the copies, and others with binding them. A beautiful specimen of the skill of the priests, is the copy of the Gospels, preserved in the Cotton Library, which was written by Aedfrid, Bishop of Durham. The illumination, the capital letters, the pictures of the evangelists, were executed with consummate skill by his successor, Ethelwold[1], and the whole when finished, was bound by Bilfrid, the anchorite, with gold and silver plates and precious stones.—*The Bibliographer*[2].

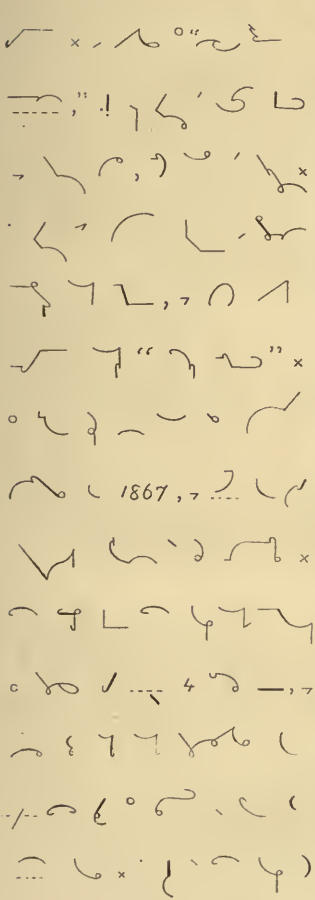
OBITUARY OF HENRY FAWCETT.



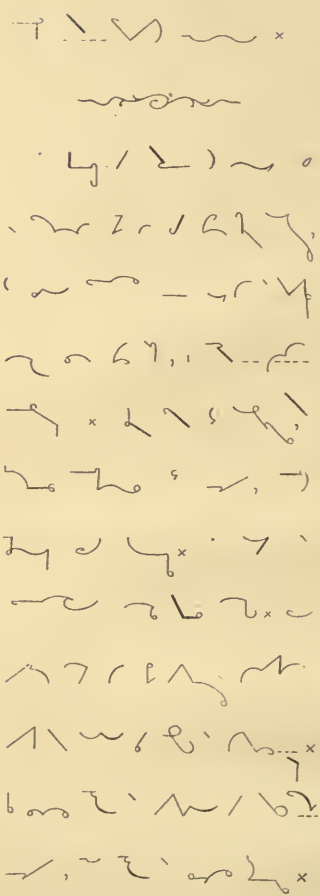
With the death of the Right Hon. Henry Fawcett passes away one of the most remarkable men of recent[1] days. Mr. Fawcett was born at Salisbury [Sɔlz′ beri], England, in 1833, and was[2] educated at Trinity Hall, Cambridge, whence he graduated with high mathematical honors in 1856. In the same year he was chosen a Fellow[3] of his college. Though an earnest[4] student, he[5] found time to indulge in field sports. When out shooting, in the autumn of 1858, he met with an accident that totally deprived him of sight. His interest in public affairs and social[6] science[7] remained[8] alive after this great misfortune, and he devised means



for keeping up his studies[1]. Within a year after the loss of his eyesight he appeared in politics as a[2] Liberal, competing for the privilege to represent Southwark in Parliament. Having been defeated, he applied himself vigorously to the study and discussion of economic topics, contributing many articles to the magazines, and finally presenting to the world his "Manual of Political Economy," and "The Economic Position of the British Laborer." Meanwhile he had been elected Professor of Political Economy in Cambridge, and after several defeats had got into Parliament as the representative of Brighton, which constituency he represented continuously until 1874. At the general election in that year he was defeated, but in the following year he was elected for Hackney. His literary labors were stimulated rather than[3] checked by his public

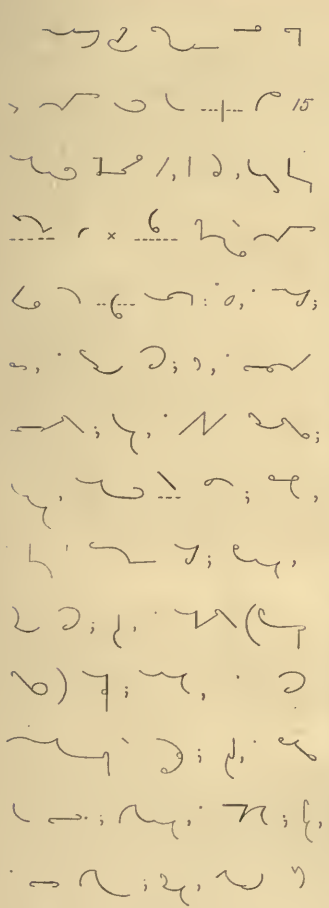


work. He revised his "Manual[1] of Political Economy," adding to it chapters on national education and the poor laws, and their influence on pauperism. The chapter on the latter topic he subsequently expanded into a book, and he also wrote a work entitled "Free Trade and Protection." His wife assisted him in all his literary labors after 1867, and he and she have jointly published a volume of essays and lectures. Mr. Gladstone took Mr. Fawcett into the Cabinet as Postmaster General about four years ago, and the improvements that he has introduced into the postal service have much more than justified his selection to fill that important office. The death of Mr. Fawcett was

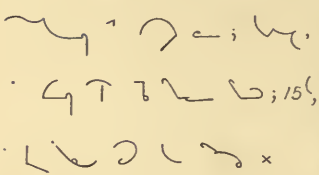


caused by pleurisy and pneumonia.

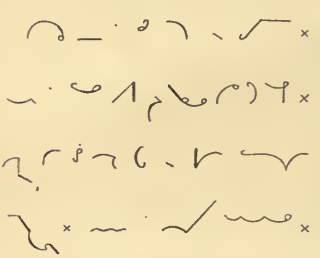
THE doctrine which Buckle was among the first to formulate, and which the late John William Draper enforced, that certain crimes come under the law of periodicity, may have[1] some element of truth, but cannot be wholly accepted. It is to be remembered that the newspapers, by an organization co-terminous with the country, gather and disseminate social[2] facts. The knowledge of criminal methods begets imitation. One runaway match will set the reporters to luridly write up anything which has a suspicion of elopement about it. It is sometimes a wave of reporting which passes over the country, and not a wave of scandals and escapades.



An English journal frankly gives credit to the American nation for at least fifteen inventions and discoveries which, it says, have been adopted all over the world. These triumphs of American genius are thus enumerated: First, the cotton-gin; second, the planing-machine; third, the grass-mower and grain-reaper; fourth, the rotary printing-press; fifth, navigation by steam; sixth, the hot-air or caloric engine; seventh, sewing-machine; eighth, the india-rubber (vulcanite process) industry; ninth, the machine manufacture of horseshoes[1]; tenth, the sand-blast for carving; eleventh, the guage-lathe; twelfth, the grain elevator; thirteenth, artificial[2] ice

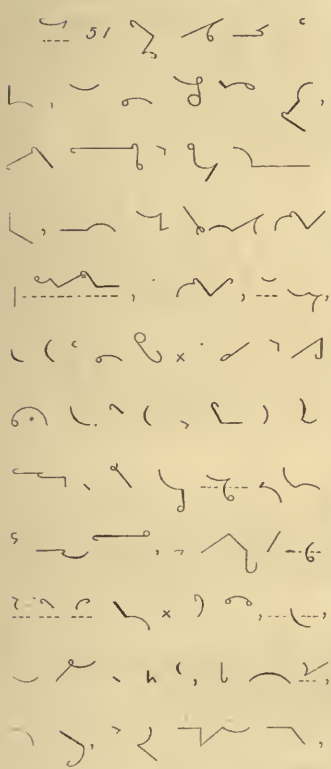


manufacture on a large scale; fourteenth, the electro-magnet and its practical application; fifteenth, the type-composing machine for printers[1].

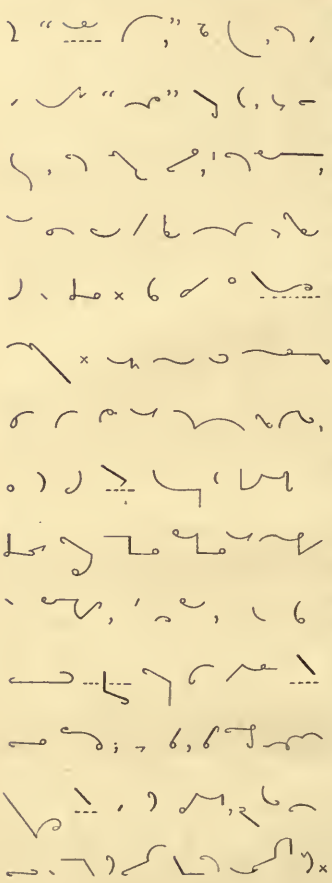


ALWAYS go the shortest way to work. Now, the nearest road to your[2] business lies through honesty. Let it be[3] your constant method then to deal clearly and aboveboard.—*The Emperor*[4] *Antoninus*[5].

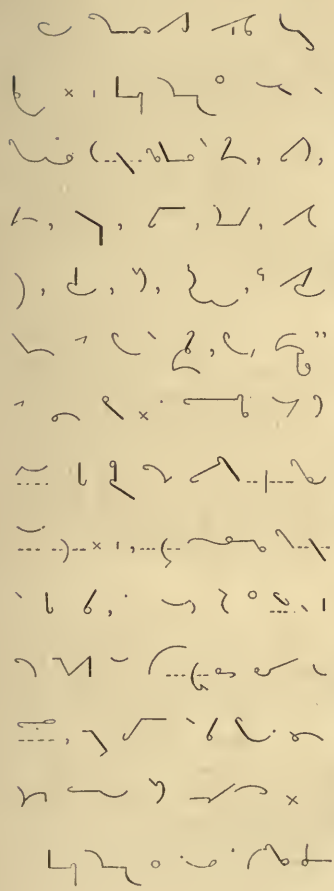
PRECIOUS OLD MANUSCRIPTS.



When the fifty-one[1] parchment rolls covered with dim, in some instances almost illegible[2], Hebrew characters of a strange archaic[3] type, came into the possession[4] of the Imperial Library at St. Petersburg, the Librarian, not unnaturally[5], viewed them with some suspicion. The story of a Rhodian[6] sailor having brought them to the Black Sea was not calculated to inspire[7] confidence in those who are familiar with the cunning of the Greeks, and the reputation which those of that particular island bear[8]. There seems, however, no reason to doubt that, whatever may be their[9] history, Oria Bashan, of the[10] ship, Ekaterina Koupa,

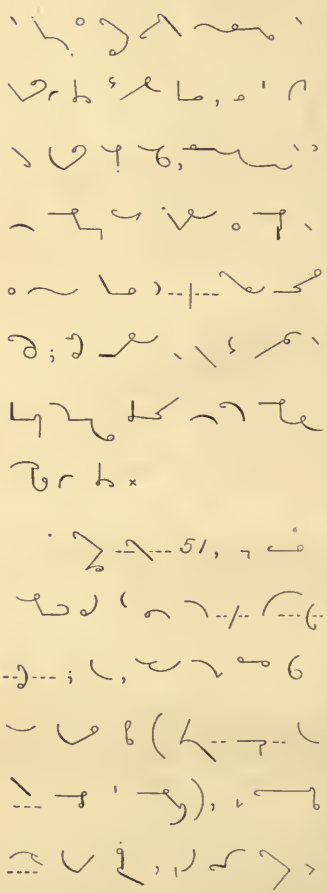


was an[1] "innocent holder," and that his father, from whom he inherited the "amulets," obtained them, after the Great Fire, from a private house, or from a synagogue[2], in some manner which it is not material to the present issue to discuss. The story is by no means[3] improbable. No doubt many ancient manuscripts still lie concealed in the remoter parts of the Levant, as was shown by the fact that Tischendorf discovered the precious Codex Sinaiticus in the Monastery of St. Catherine, on Mount Sinai, after this collection had been pretty well ransacked by curious[4] scholars[4]; and the Jews, jealous[4] of the Christian and Moslem populations by whom they are surrounded[5], would be even more careful to keep their Holy Book from unhallowed eyes.



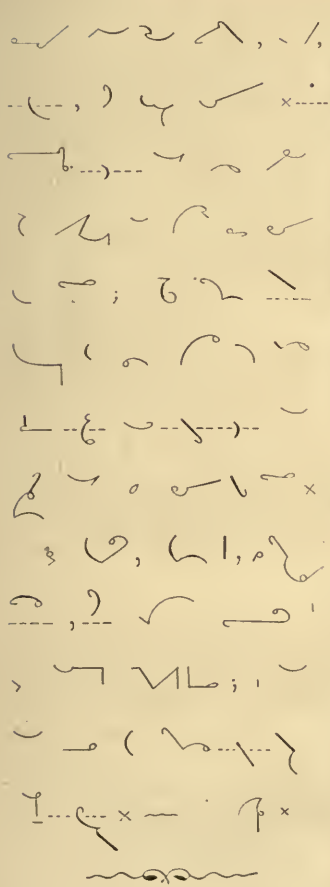
Only[1] fragments of the Rhodian rolls have been deciphered. But Dr. Harkavy is enabled to pronounce them to be parts of the Books of Jeremiah[2], Hosea, Joel, Obadiah, Haggai, Zachariah, Ruth, Esther, Daniel, Isaiah[3], and Zephaniah, with an original poem on the Fall of Jerusalem, following the "Lamentations" on the same subject. The characters in which they are written differ considerably from the Hebrew at present in use. But, though the manuscripts appear to be of different ages, the newest of them is believed to date from a period not later than the second century after Christ, and to be the work of Jews belonging to some isolated colony of their countrymen.

Dr. Harkavy has commenced the laborious task



of comparing his precious Hebrew manuscripts of portions of the Old Testament with the received text, and has already lighted upon variations interesting in themselves, and significant of what may be expected when the comparison has extended to as many books as it at present covers verses. And there is good reason to hope that the result of Dr. Harkavy's discovery may be very extensive emendations of the Old Testament.

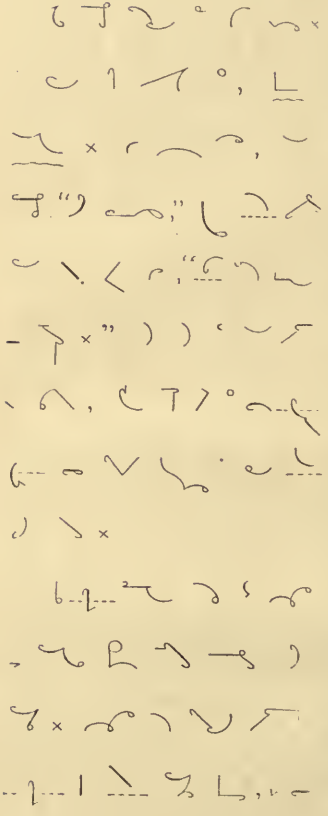
The parchments number fifty-one, and a close inspection shows that some are much older than others; for, not only[1] are the skins themselves in various states (which might be accounted[2] for by accidents or exposure), but the characters employed vary considerably, showing a[3] gradual approach to the



square writing of the ordinary Hebrew, to which, however, they are evidently anterior[1]. The characters used in the most recent of them originated not later than the second century after Christ; and this is confirmed by the fact that some letters are almost identical with those known to have been used in Jerusalem in the first century[2] before Christ.

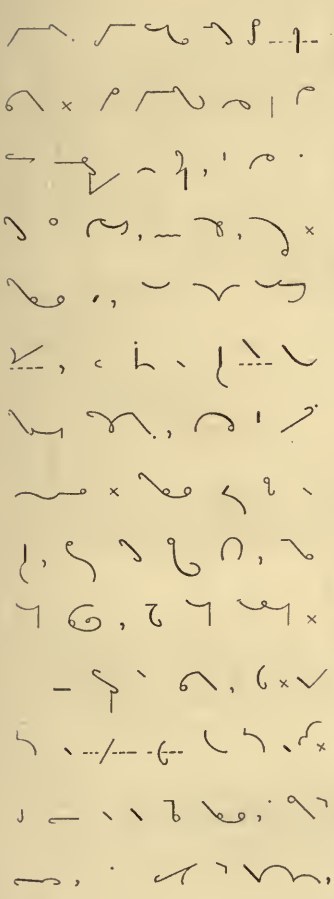
As to the variations, they may be due, as the Professor remarks, either to later corrections or to the antiquity and purity of the text; but in any case they promise to be both interesting and valuable.—*The Healthside.*

HOW MUCH SLEEP?



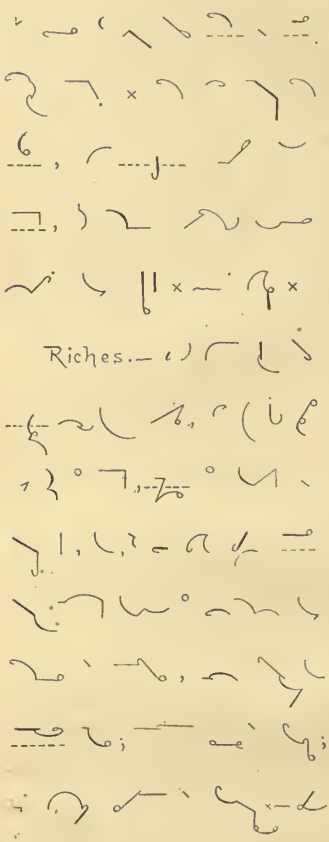
On this question every one is a law to himself. The only true rule is, *take enough*[1]. Old Mother Means, in Eggleston's "Hoosier Schoolmaster," advised her husband when buying cheap land, "While yer a gettin', get a plenty[2]." So say we in regard to sleep, a full[3] quantity of which is more valuable than the grandest prairie farms the sun ever shone upon.

It is during the wakeful hours that the muscles and the nervous system and brain expend their energies. Muscles are partially recruited during the day by nourishment taken, but the great



recuperating work of the nerves and brain is done during sleep. Such recuperation must at least equal the expenditure made through the day[1], or else the brain is ill-nourished,—wastes, withers. Persons who, in early English history, were condemned to death by being prevented from sleeping, always died raving[2] maniacs. Persons who are starved to death suffer brain starvation also, and pass into hallucinations and then into insanity.

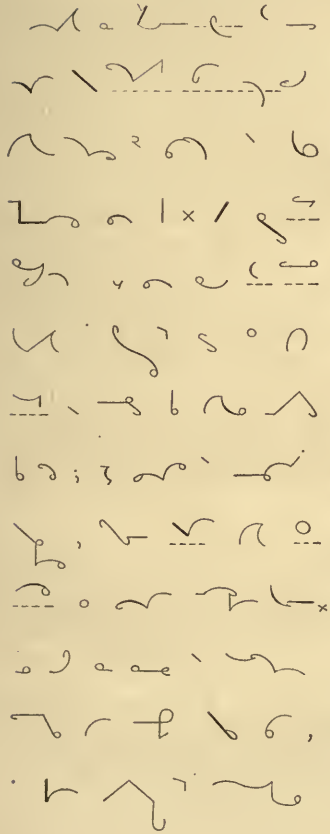
Get plenty of sleep, then. Better an hour too much than half an hour too little. Don't carry to bed a day's business, the supper of a gourmand, the whirl of a ballroom,



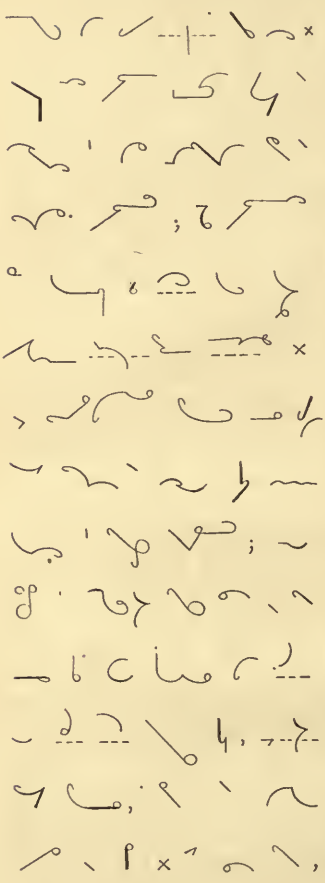
or the cares that should be passed over to God's merciful keeping. Free mind and body from these, lie down and rest in quietude, and so awake refreshed next morning for the duties of the day.—*The Healthside.*

RICHES.—Whoever shall look heedfully upon those who are eminent for their riches, will not think their condition such as that he should hazard his quiet, and much less his virtue to obtain it; for, all that great wealth generally gives above a moderate fortune is more room for the freaks of caprice, and more privilege for ignorance and vice: quicker succession of flatteries; and a larger circle of voluptuousness.—*Johnson*[1].

MIRTH AS A MEDICINE.

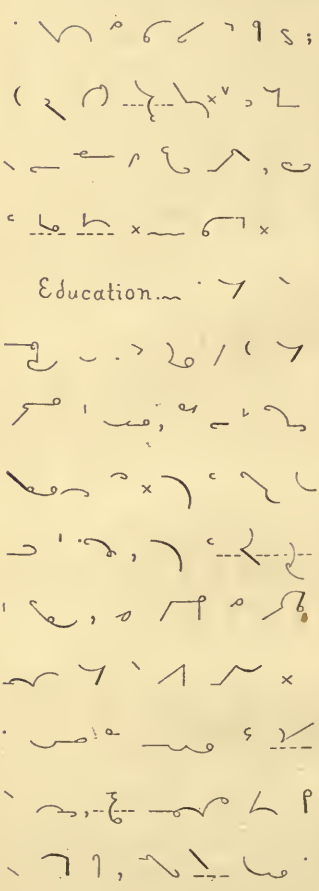


Mirth has a hygienic value that can hardly be overrated while our social life remains what the slavery of vices and dogmas has made it. Joy has been called the sunshine of the heart; yet the same sun that calls forth[1] the flowers of a plant is also needed to expand its leaves and ripen its fruits; and without the stimulus of exhilarating pastimes, perfect bodily health is as impossible as moral and mental vigor. And as sure as a succession of uniform crops will exhaust the best soil, the daily repetition of a monotonous



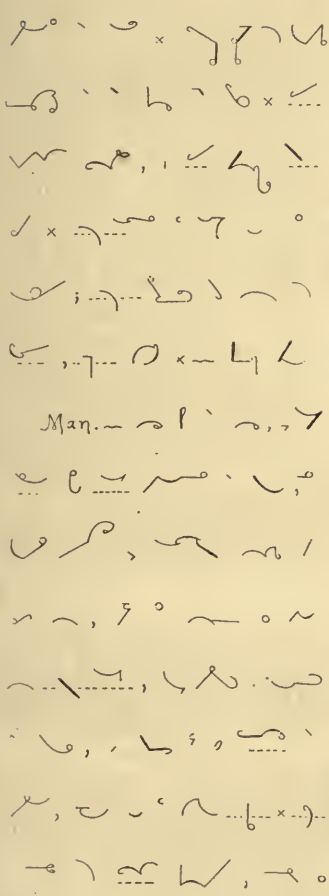
occupation will wear out the best man. Body[1] and mind require an occasional change of employment or else a liberal supply of fertilizing recreations; and this requirement is a factor whose omission often foils the arithmetic of our political economists. To the creatures of the wilderness, affliction comes generally in the form of impending danger—famine or persistent persecution; and under such circumstances the modifications of the vital process seem to operate against its long continuance; well-wishing nature sees her purposes defeated, and the vital energy flags, the sap of life runs to seed. On the same principle,

an existence of joyless drudgery seems to drain the springs of health, even at an age when they can[1] draw upon the largest inner resources. Hope, too often baffled, at last withdraws[2] her aid. The tongue may be attuned to canting hymns of consolation, but the heart cannot be deceived; and with its sinking pulse the strength of life ebbs away. Nine-tenths of our city children are literally starving for lack of recreation; not the means of life, but its object, civilization has defrauded them of. They feel a want which bread only can aggravate; for only hunger helps them to forget the misery of *ennui*[3].



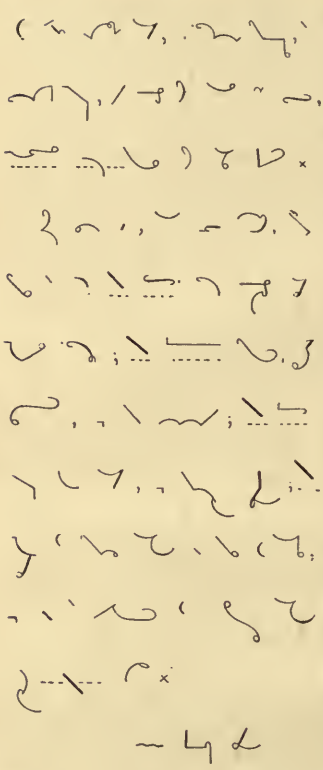
The pallor is the sallow hue of a cedar plant; they would be healthier[1] if they were happier. I would undertake to cure a sickly child with fun and rye bread, sooner than with tidbits and tedium.—*Selected.*

EDUCATION.—The knowledge of external nature and of the sciences which that knowledge requires or includes, is not the great, or the frequent business of the human mind. Whether we provide for action or conversation, whether we wish to be useful or pleasing; the first requisite is the religious and moral knowledge of right and wrong. The next is an acquaintance with the history of mankind, and with those examples which may be said to embody truth, and prove by events the



reasonableness[1] of opinions. Prudence and justice are virtues and excellencies of all times and all places. We are perpetually moralists, but we are geometricians by chance. Our intercourse with intellectual nature is necessary; our speculations upon matter are voluntary, and at leisure.—*Dr. Johnson.*

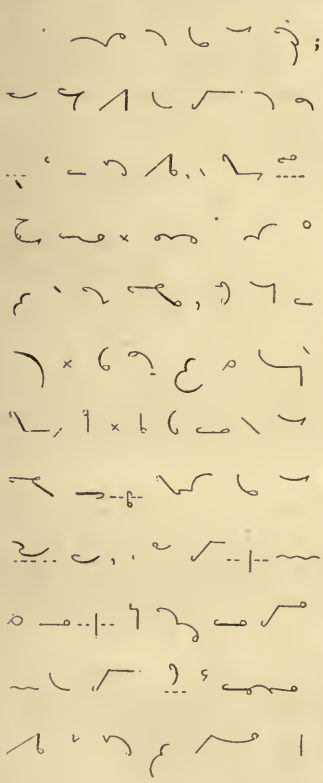
MAN.—Man's study of himself, and the knowledge of his own station in the ranks of being, and his various relations to the innumerable multitudes which surround him, and with which his Maker has ordained him to be united, for the reception and communication of happiness, should begin with the first glimpse of reason, and only end with life itself. Other acquisitions are merely temporary, except as



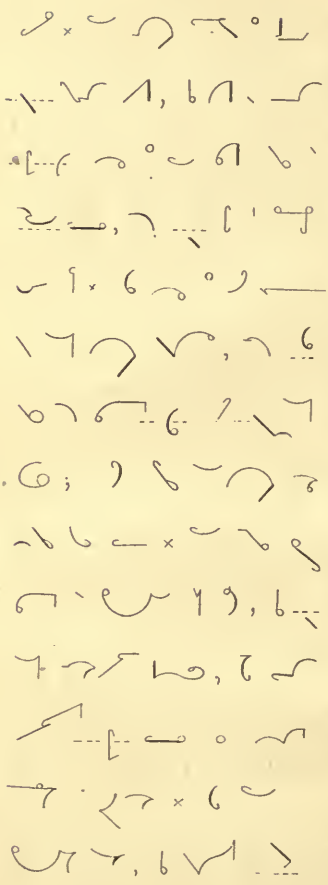
they contribute to illustrate the knowledge, and confirm the practice, of morality and piety, which extend their influence beyond the grave, and increase our happiness through endless duration.

There are some who, in a great measure, supply the place of reading by gleaning from accidental intelligence and various conversation: by a quick apprehension, and judicious selection, and a happy memory; by a keen appetite for knowledge, and a powerful digestion; by a vigilance[1] that permits nothing to pass without notice, and a habit of reflection that suffers nothing useful to be lost.—*Dr. Johnson.*

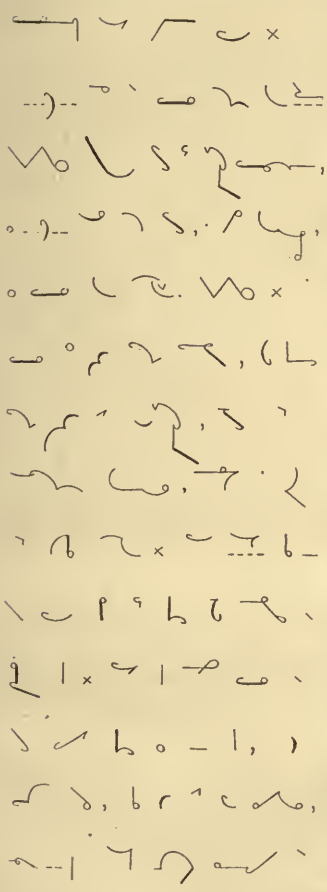
MANUFACTURE OF OPTICAL GLASS.



The materials are fused in the furnace; and when nearly ready for working are stirred about with cold iron[1] rods, to break the cords[2] and lessen the cloudiness. Sometimes the metal is ladled all from the crucibles[3], and thrown into cold water. This stirring and ladling has the effect of breaking the striæ[4]. It is then closed up in the crucible[3] again until it is perfectly fused in the ordinary manner, but is not worked out—as is the case at Whitefriar's Glass Works—for working either with the glassmakers' rods or the iron ladle renders it

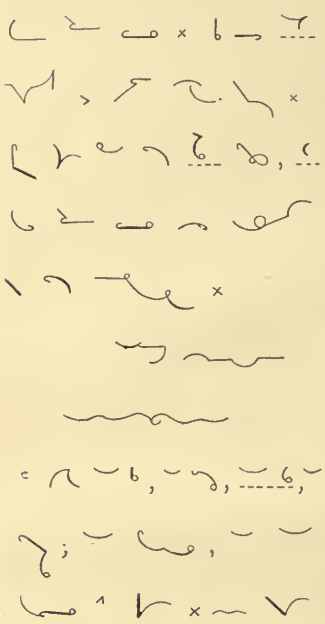


worse. When a large crucible is declared to be perfectly ready, it is allowed to cool until the whole mass is one solid piece of ordinary glass, weighing about twelve[1] or sixteen hundred weight. This mass is sure to crack up into large bowlders, and from these pieces are selected those which are[2] to be made into lenses; they are placed in large moulds made of the best fine clay. When a piece has been selected of sufficient height and size, it is put into a mould of the required dimensions, and then gradually reheated until the glass has melted exactly the shape of the mould. Then when sufficiently annealed, it is polished by the



glasscutter in the regular manner.

Other kinds of glass are made for optical purposes by being blown with the iron tube of the glassmaker, as other things are blown, such, for instance, as glass for magnifying purposes[1]. The glass is ladled from the crucible, then taken from the ladle on the end of the iron tube, and blown of a uniform thickness, exactly the shape of a lady's muff. When annealed it is cut up one side with a diamond and then exposed to considerable heat. When the heat causes the glass to open where the diamond has cut it, as it gradually opens, it is laid on a flat surface, and spread out into a large square of

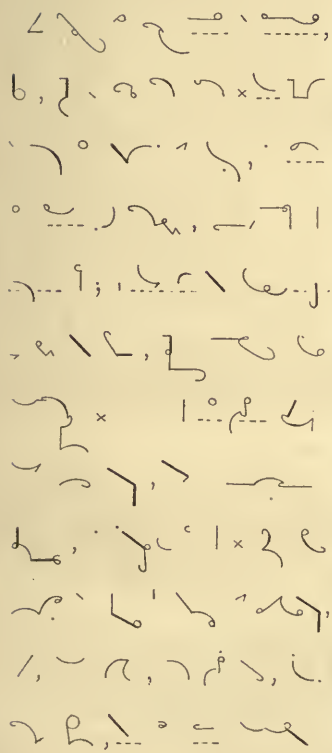


thick optical glass. It is again annealed and polished to the required magnifying power. It will be easily seen from all these processes, that fine optical glass must necessarily be very expensive.

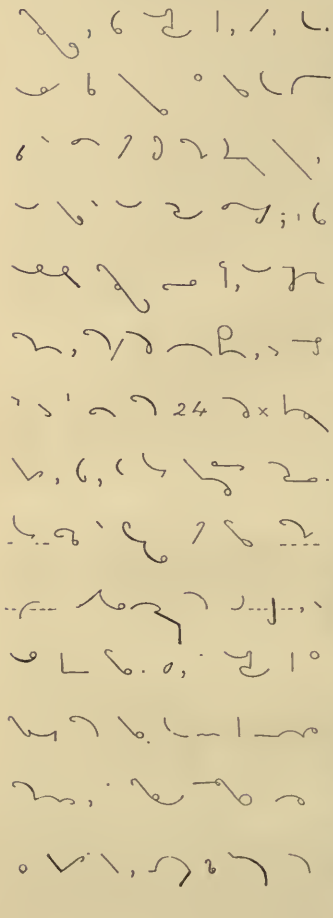
English Mechanic.

We live in deeds, not years; in thoughts, not breaths; in feelings, not in figures on a dial.—*Bailey.*

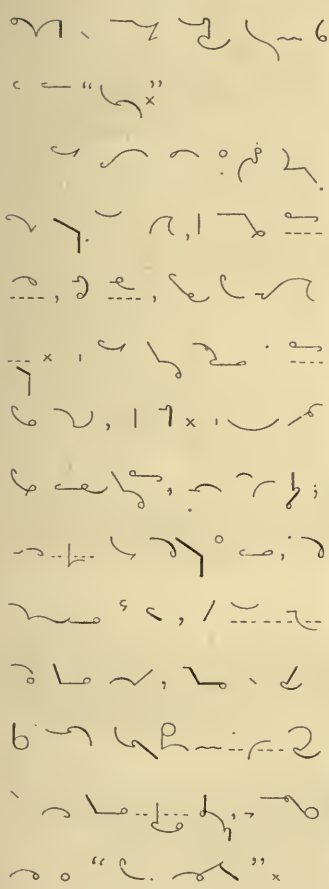
CHECKED PERSPIRATION.



Checked perspiration is the fruitful cause of sickness, disease[1], and death to multitudes every year. If a tea-kettle of water is boiling on the fire, the steam is seen issuing from the spout[2], carrying the extra heat away with it; but if the lid be fastened down and the spout be plugged, a destructive explosion follows in a very short time[3]. Heat is constantly generated in the human body, by the chemical disorganization, the combustion of the food we eat. There are seven millions of tubes or pores on the surface of the body, which, in health, are constantly open, conveying from the system, by what is called insensible[4]

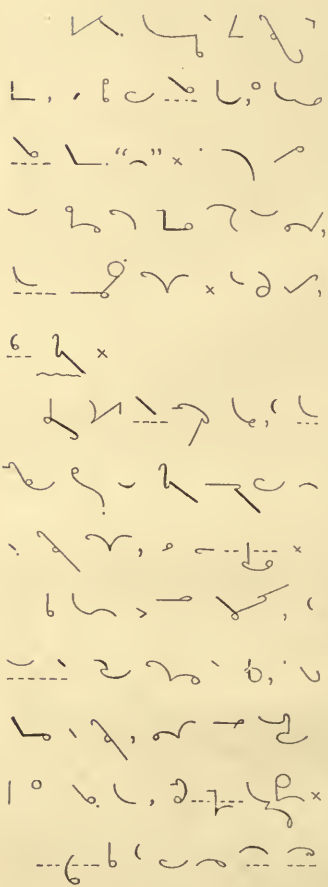


perspirations, this internal heat, which, having answered its purpose, is passed off like jets of steam which are thrown from the escape pipe, in puffs of any ordinary steam engine; but this insensible perspiration carries with it, in a dissolved form, very much of the waste matter of the system, to the extent of a pound or more every twenty-four hours. It must be apparent, then, that if the pores of the skin are closed, if the multitudes of valves, which are placed over the whole surface of the human body, are shut down, two things take place: First, the internal heat is prevented from passing off—it accumulates every moment, the person expresses himself as burning up, and large draughts of water are



swallowed to quench the internal fire—this we call "fever."

When the warm steam is constantly escaping from the body in health, it keeps the skin moist, and there is a soft, pleasant feel and warmth about it. But when the pores are closed the skin feels harsh, hot and dry. But another result follows the closing of the pores of the skin, and more immediately dangerous; a main outlet for the waste of the body is closed, the waste re-mingles with the blood, which in a few hours becomes impure, and begins to generate disease in every fiber of the system — the whole machinery of man becomes at once disordered, and he expresses himself as "feeling miserable."

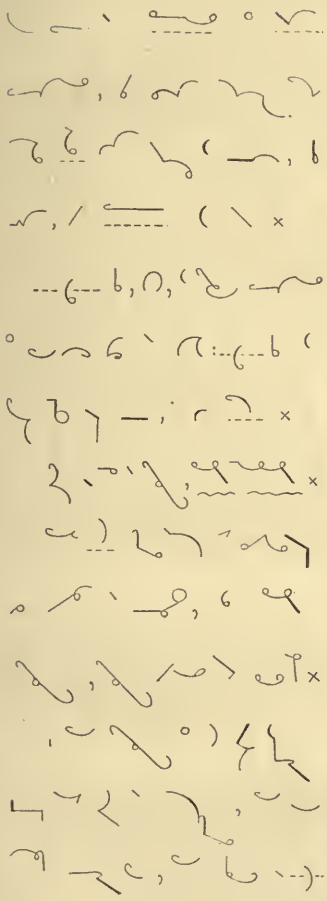


The terrible effects of checked perspiration of a dog, who sweats only by his tongue, is evinced by his becoming "mad." The water runs in streams from a dog's mouth in summer, if exercising freely. If it ceases to run, that is *Hydrophobia.*

It has been asserted by a French physician, that if a person suffering under *Hydrophobia* can be only made to perspire freely, he is cured at once.

It is familiar to the commonest observer, that in all ordinary forms of diseases, the patient begins to perspire[1], simply because the internal heat is passing off, and there is an outlet for the waste of the system.

Thus it is that one of the most important means



for curing all sickness is bodily cleanliness[1], which is simply removing from the mouths of these little pores that gum, dust and oil, which clog them up.

Thus it is, also, that personal cleanliness is one of the main elements of health: thus it is that filth and disease habitate together, the world over.

There are two kinds of perspiration, *sensible* and *insensible.*

When we see drops of water on the surface of the body as the result of exercise, that is *sensible* perspiration, perspiration recognized by the sense of sight.

But when perspiration is so gentle that it cannot be detected in the shape of water drops, when no moisture can be felt, when it is known to us

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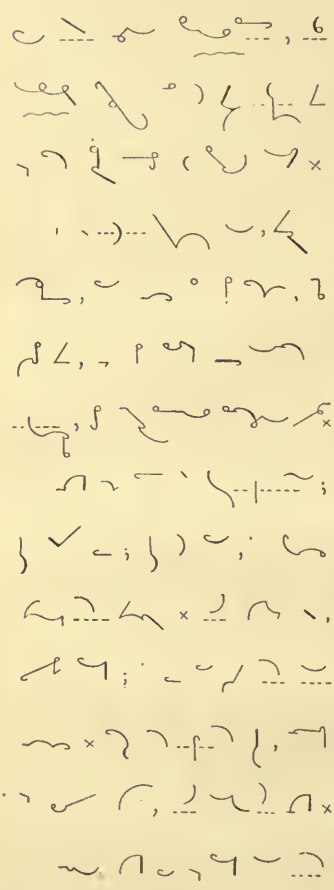
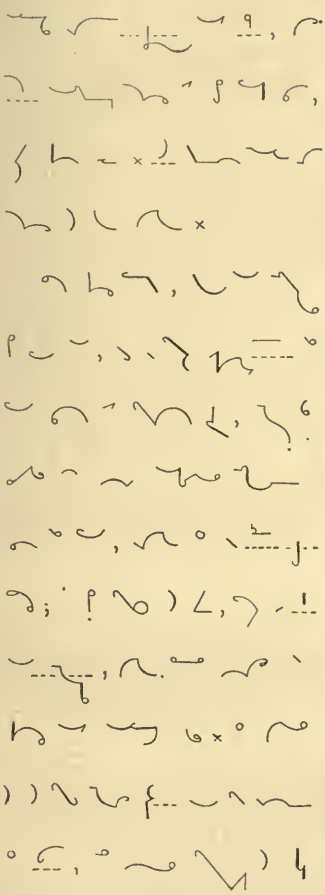


only by a certain *softness* of the skin, that is *insensible* perspiration, and is so gentle that it may be checked to a very considerable extent without special injury.

But to use popular language, which cannot be[1] mistaken, when a man is sweating freely, and it is suddenly checked, and the sweat is not brought out[2] again in a very few minutes[3], sudden and painful sickness is a very certain result.

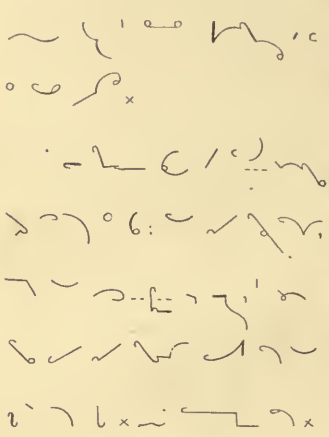
A lady heard the cry of fire at midnight; it was bitter cold; it was so near, the flames illuminated her chamber. She left the bed, hoisted the window; the cold wind chilled her in a moment. From that hour until her death, a quarter of a century later, she never saw a well day.

A young lady went to a window in her



night-clothes to look at something in the street, leaning her unprotected arms on the stone window sill, which was damp and cold. She became an invalid and will remain so for life.

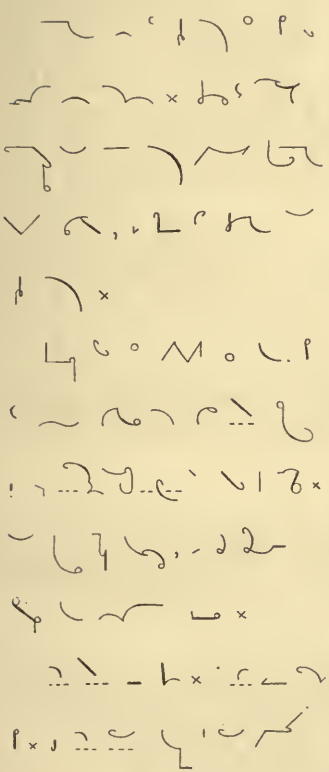
Sir Thomas Colby, being in a profuse sweat one night, happened to remember that he had left the key of his wine cellar on the parlor table, and fearing that his servants might improve the inadvertence and drink some of his wine, he left his bed and walked down stairs; the sweating process was checked, from which he died in a few days, leaving six million of dollars in the English funds. His illness was so brief and violent that he had no opportunity to make his will, and his immense property was divided



among five or six day-laborers who were his nearest relations.

The great practical lesson which we wish to impress upon the mind of the reader is this: *When you are perspiring freely,* KEEP IN MOTION *until you get to a good fire, or to some place where you are*[1] *perfectly sheltered from any draught of air whatever.—The Eclectic Star.*

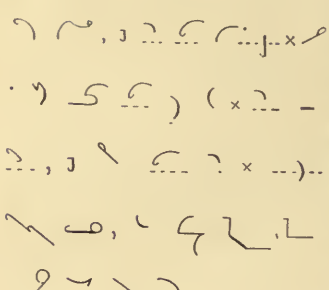
ITEMS OF INTEREST.



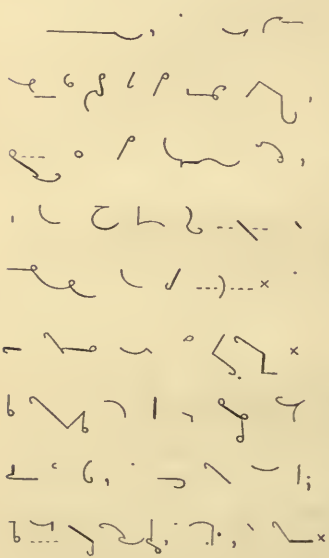
COFFEE made with distilled[1] water is said to have a greatly improved aroma. It seems that the mineral carbonates[2] in common water render the tannin of the coffee berry soluble, but the drug will not dissolve in distilled water.

DR. FLINT is reported as having said that many lives are lost by starvation owing to an over-estimate of the nutritive value of beef tea and meat juices. In typhus and typhoid fevers, he says there is no good substitute for milk and eggs.

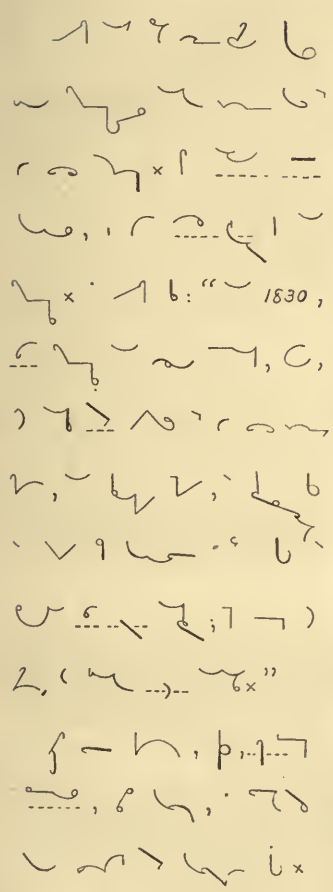
READ by good day-light. The light should come from the side. Do not read when fatigued or when recovering



from illness, and do not read while lying down. Rest the eyes occasionally while using them. Read good print, and do not stoop while reading. Use proper glasses, avoid alcohol and tobacco, and take exercise in the open air.

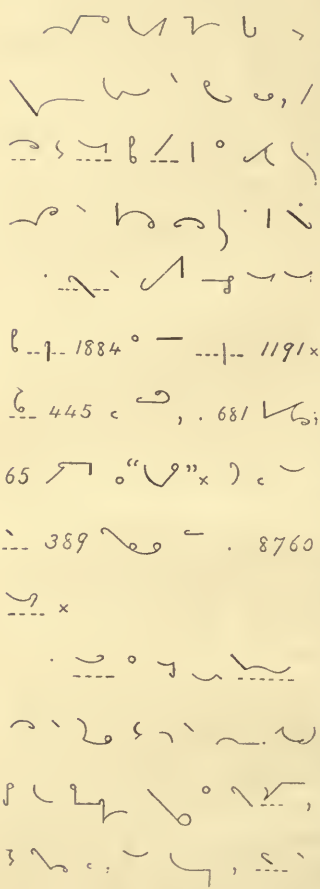


COCAINE, the new local anæsthetic[1] that has suddenly achieved such an excellent reputation, has been known as such for a great many years, but for a long time was found to be too expensive for general use. The great progress now is the cheapening of the product. Its properties are due to a substance nearly identical[2] to theine, the active principle in tea, and it is indeed obtained from one of the tea plants, the *maté,* of Paraguay.



A WRITER in the St. Louis *Medical Journal* advises young practitioners never to make fun of an old woman's remedy. It will not only give offence, but will miss a valuable[1] aid in practice. The writer adds: "In 1830, while practicing in Madison County, Illinois, I was induced by the representations of an old woman to make the trial, in dysentery and diarrhœa, of tablespoonful doses of pure cider vinegar with the addition of sufficient salt to be noticeable, and it acted so charmingly[2] that I have never used anything else."

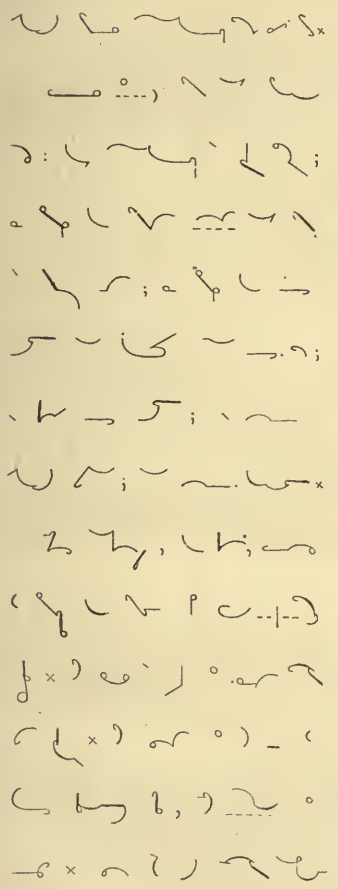
CHILDREN grow taller, it is said, during an acute sickness, such as fever, the growth of the bones being stimulated by the febrile condition.



AMERICANS average a daily addition to the public fortune of seven cents, which means that the United States each day is worth four millions of dollars more than it was the day before.

THE number of railroad accidents in the United States during 1884 is given at 1191. Of these 445 were collisions and 681 derailments; 65 recorded as "various." There were in all 389 persons killed and 8760 injured.

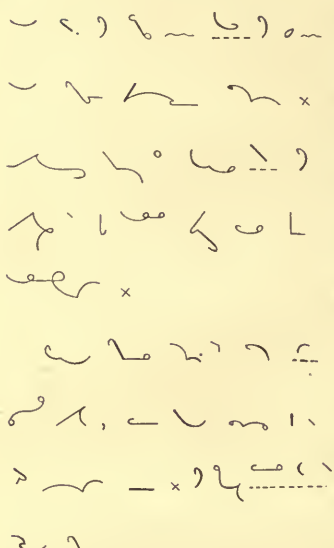
THE opinion is entertained now by many men of science that the art of making artificial stone for structural purposes is prehistoric, and that the pyramids were, in fact, built of



artificial[1] blocks manufactured from the surrounding plain.

GLUCOSE is used principally in the following ways: for the manufacture of table syrup; as a substitute for barley malt in the brewing of beer and ale; as a substitute for cane sugar in confectionery and in canning fruit; to adulterate cane sugar; to make artificial honey; in making vinegar.

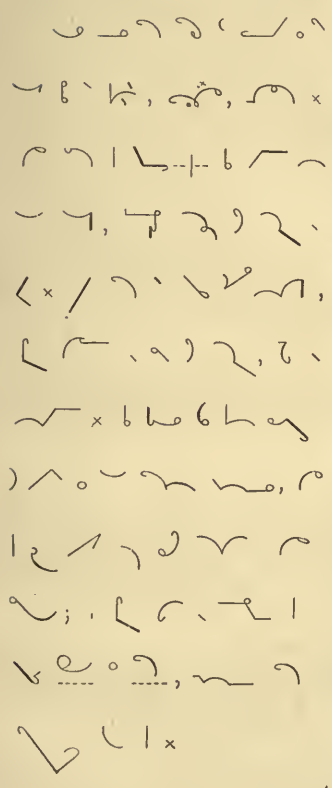
A GERMAN entomologist, F. Dahl, claims that spiders have perfect sight only at very short distances. Their sense of touch is consequently remarkably well developed. Their smell is so good that they can distinguish odors, and their hearing is excellent. Some of them show a remarkable instinct



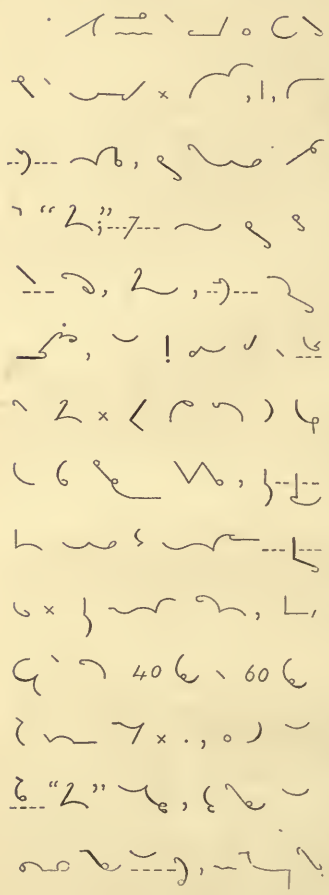
in building their webs—even their first—in perfect geometrical form. A reflective[1] power is evinced by their refusal of tough insects which have been once attacked unsuccessfully[2].

FLOATING bricks are made of a very light silicious earth, clay being sometimes added to bind the material together. Their strength[3] equals that of ordinary bricks.

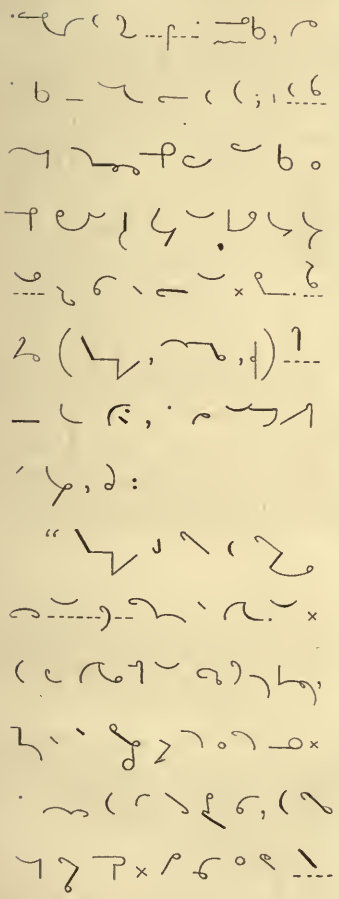
ASIATIC CHOLERA.



News comes from France that cholera has appeared in the cities of Toulon, Marseilles, and elsewhere. Last year it began at its regular home in India[1], and extended westward through Arabia[1] to Egypt. Judging from all past histories of the malady, it will be likely to spread through Europe, and then to America. Its advance this time has not been so rapid as in former epidemics, else it would have reached our shores early last spring, but it will be well to expect it before the season is over, and to make every preparation for it.

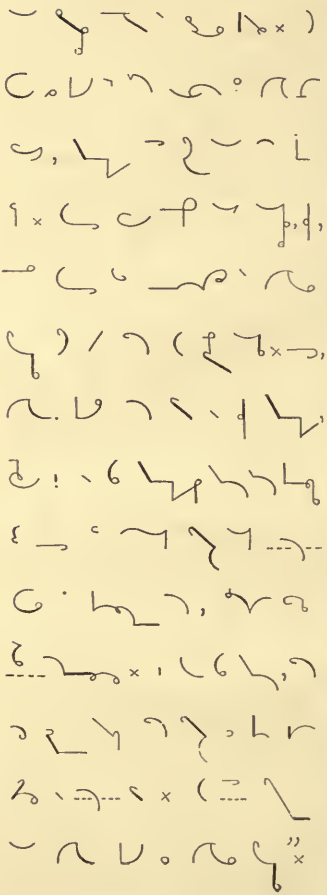


The real *cause* of cholera has long been a subject of inquiry. Latterly it, like all other maladies, has been pronounced the result of a "germ"; and much money has been spent by France, Germany, and other European governments in aiding certain gentlemen to find the particular germ. Egypt last year was visited for this specific purpose, and it was at one time announced that the animalcule had been found. It was an animal form, taking the length of from 40,000 to 60,000 of them to make an inch. And, as usual in all these "germ" investigations, they were present in some cases and absent in others—a fact proving

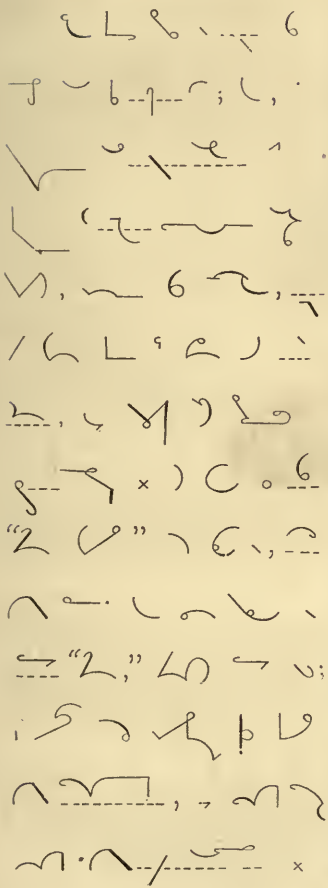


conclusively that they are not at all the *cause* of the disease, else the disease could never occur without them; but that these minute organisms exist only when disease has caused sufficient death-change in tissues for the foul things to find soil to grow in. Speaking of these germs (bacteria, microbes, etc,), Dr. G. F. Yeo, the latest English writer on physiology, says:

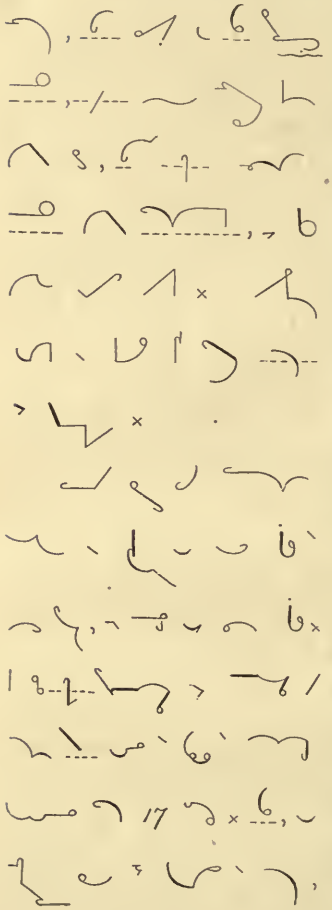
"Bacteria do not appear without progenitors more than any other form of living thing. They float lifeless and dry in multitudes through our atmosphere, and adhere to all substances to which the air has free access. The moment they light upon suitable soil, they burst into prodigious activity. Such a soil is supplied by



any substance capable of spontaneous decomposition. So long as the tissue of a higher animal is healthy and well nourished, bacteria cannot thrive in immediate contact with it. They can only exist in the intestines, etc., because they can find accumulations of lifeless fluids there which offer them a suitable nidus. Active, living tissues are able to destroy bacteria; and it is only owing to this bactericide power of our textures that we can with immunity breathe into our lungs the atmospheric air, and swallow multitudes of these organisms. But for this power, every wound[1] would become putrid, every breath would admit deadly germs to our blood. . . . . They cannot propagate in live tissue as in lifeless fluids."

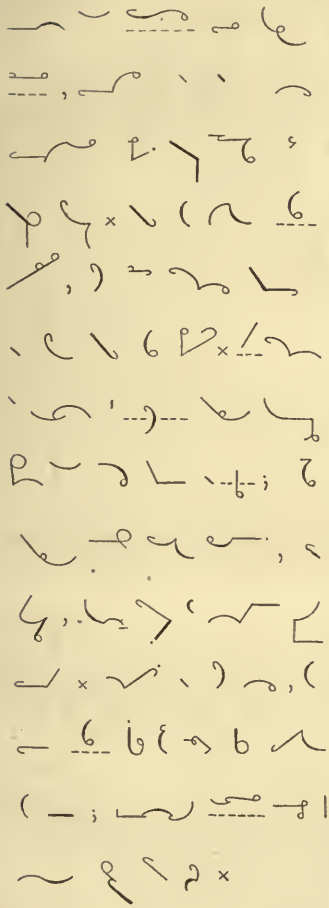


We have taken space to put this question in its true light; for, the public needs to be undeceived on a topic that a few cranky individuals pursue, to make themselves a marvel, and about which they may talk with a solemn show of wisdom, after the absurdity of their speculations have been exploded. So long as these "germ theories" are listened to, men will be seeking for some poison to kill the "germ" which may also kill the patient; but rational ways to restore the diseased tissues will be overlooked, and the mortality from that malady will be much increased.



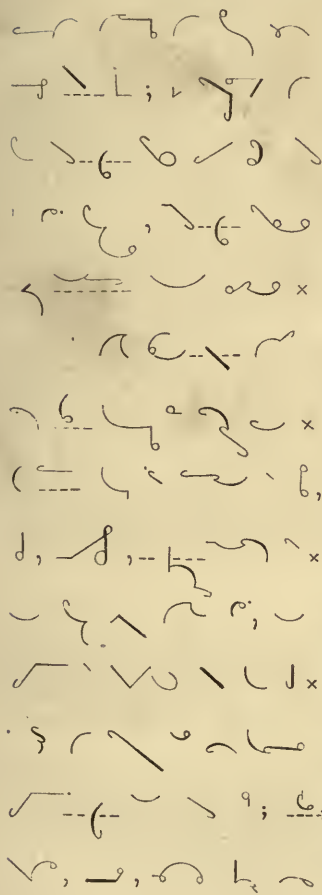
And further, while searching after the *speculative* causes, much money and precious time will be spent, while the true and simple causes will be overlooked, and the disease left to run riot. Restore vitality to tissues and it will brush away all the bacteria.

Cholera has been shown clearly enough to develop under known conditions of human filth[1], and to extend under the same conditions. It starts[1] during the pilgrimages to the Ganges which are made by hundreds[2] of thousands of Mahomedan fanatics every seventeen years. These, under a tropical sun and with the vilest of water,



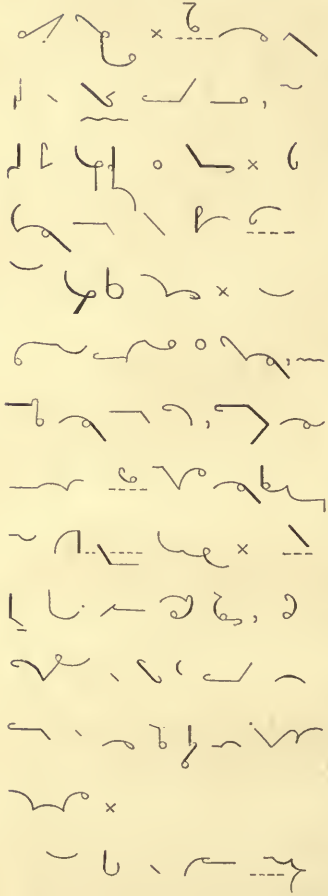
camp in enormous crowds for several weeks, careless of all human cleanliness[1], and saturating body and clothes with the basest filth. Before they leave these resorts, their weakened frames begin to fall before this saturation. Each form of animal or other poison affects the system in ways peculiar to itself; and this poison causes the nerve sinking, blood changes, vomiting and purging that mark Asiatic cholera. Returning to their homes, they carry these conditions with them and spread the disease wherever they go; and commercial intercourse extends it among susceptible people throughout the world[2].

It is notorious[1] that cholera always attacks first and most severely the filthiest cities, and the filthiest quarters[2] in those cities. The ravages in Asia last year were light compared with previous epidemics; but in Egypt, where the late war had placed certain sections in a most fearful state, the cholera mortality was frightful, while other portions almost entirely escaped it. And now it breaks out in Toulon, France, which has the repute of being a place of abominable dirtiness; and Marseilles next to it. This history will no doubt be repeated while the destroyer is marching around the world.



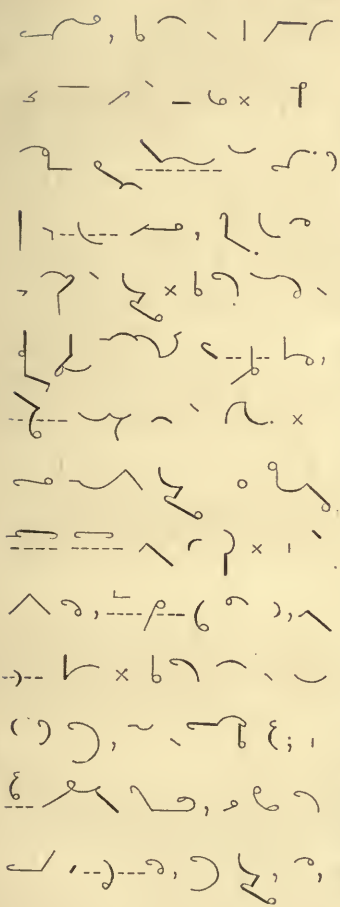
Cleanly localities will suffer to some extent by contact; but the burden of the scourge will fall upon those places where there is open or concealed filthiness, and upon those persons who are unclean in their surroundings.

The health lesson to be learned from these facts is a very plain one. They call for a complete cleaning of cities, towns, and residences, at every point and in every particular. No filth should be left concealed, no work of purification be half done. The blindest alley probably needs more vigorous working than any open street; and vaults, pools, garrets, and cellars demand the most

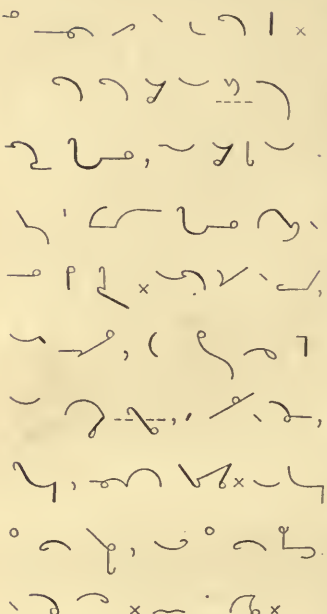


searching proceedings. And these matters should be attended to *before* the cholera comes and not delayed till the visit of the destroyer has begun. Then they must be kept up steadily while any vestige of the disease remains. No slacking of the cleanliness is permissible—gutters must be kept free, garbage must not accumulate, vaults and pools must be disinfected and not allowed to become offensive. By adopting and continuing radical measures of this kind, there is every reason to believe that cholera may be clipped of most of its dangers and made comparatively harmless.

In addition to local and individual



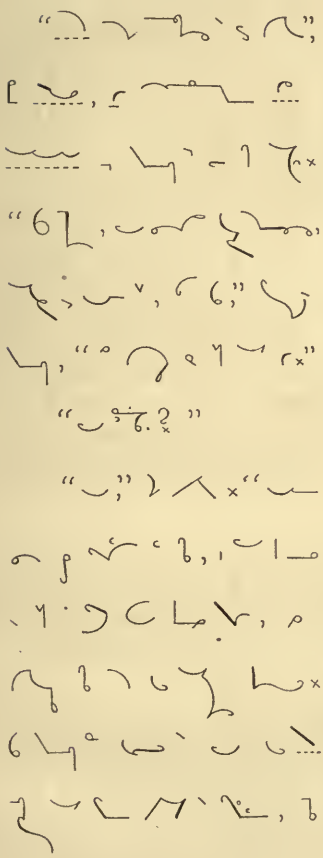
cleanliness, it is important to eat regularly and of the common round of good foods. A sad mistake has been made by many in curtailing their diet to a few articles, dropping off meats and the majority of vegetables. It is very unwise to disturb the digestion and impoverish the blood at such times, by this unnatural mode of living. Coarse and unripe vegetables, as string beans and green corn, should be laid aside. But all ripe fruits, and quite as much those somewhat acid, should be used daily. It is very important to know that they are fresh, and not to gormandize with them, but with these reasonable precautions he is safest from cholera who uses fruits, fresh vegetables, meats,



and his accustomed round of food every day.

Very free indulgence in iced water and very cold drinks, and any indulgence whatever in beer or alcholic drinks, will be sure to cause sad trouble. In every history of cholera, in all countries, they suffer most and die in largest numbers who resort to whiskey, brandy, and similar beverages. No fact is more positive, none is more instructive to wise men.—*The Healthside.*

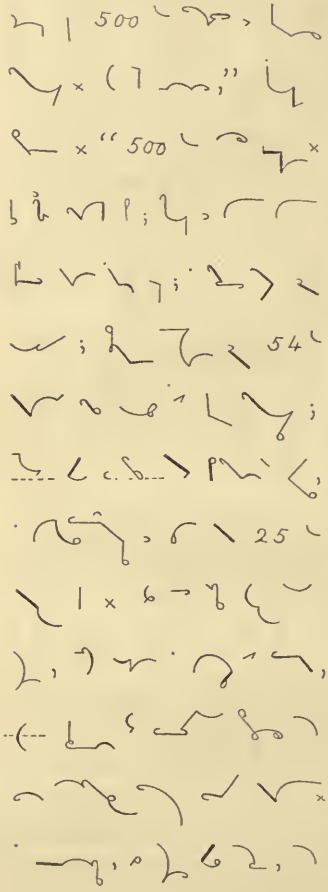
THE TALLEST TREE IN THE WORLD.



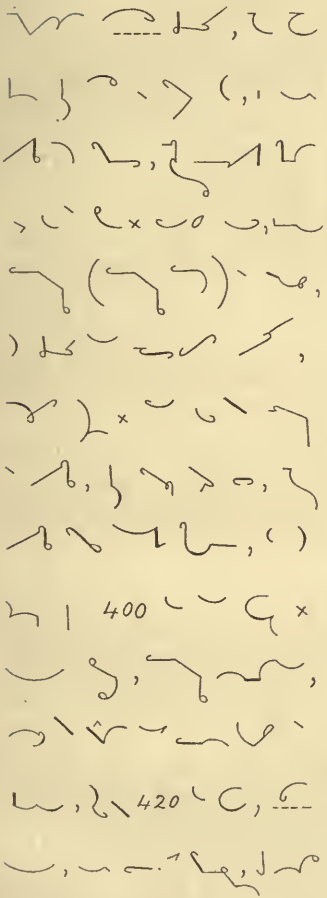
"Here are the extremes of plant life," said a[1] botanist, holding a microscopic slide in one hand and a picture of a great tree in the other. "This is a diatom, one of the smallest vegetable organisms, invisible to the naked eye, while this," flourishing the picture, "is the largest as to height in the world."

"One of the sequoias?"

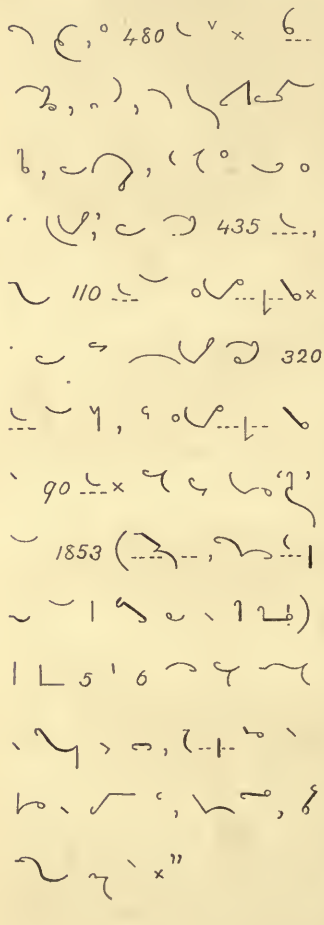
"No," was the reply. "Uncle Sam has done pretty well with trees, but when it comes to height the British lion takes the belt, as the loftiest trees are found in the Australian dominion. This picture is a photograph of one found by a traveler in the Black Range of Berwick, and it is



estimated at 500 feet from the ground to the topmost branch. Think of it a moment," continued the speaker. "Five hundred feet means a good deal. It would dwarf the Bartholdi statue; Trinity would look like a telegraph pole compared to it; the Brooklyn bridge would be nowhere; Strasburg Cathedral would be 54 feet below the birds' nests on the top branches, and, if the giant were placed by the side of the pyramid of Cheops, the leaves of the eucalyptus would still be twenty-five feet above it. That's the kind of trees they have in Australia, and they are undoubtedly the largest on the globe, though it is claimed that the California specimens are more impressive from their greater bulk. The gum trees, as the Australian giants are called, are

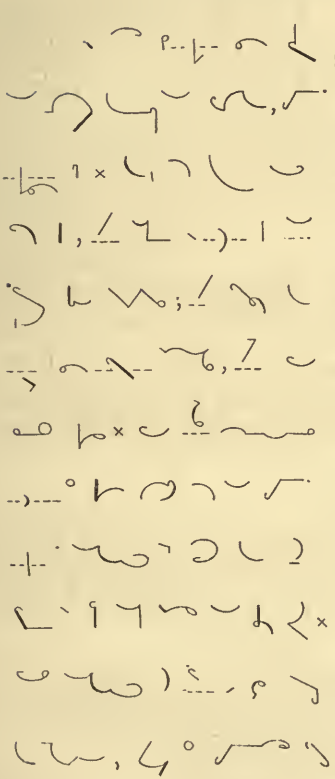


a comparatively modern discovery, and for a long time it was impossible to approach them, but now roads are broken, and travelers can ride directly to the foot of several. One of the first known, a Kanni eucalyptus (*Eucalyptus colossea*) of botanists, was discovered in a glen of the Warren River, Western Australia. When found by a party of riders, it was prostrate upon the ground, and four riders abreast entered the trunk, that was estimated at 400 feet in length. Another species, *E. Amygdalina*, measured by Boyle in the gloomy forest of Daudenong[1], was found to be 420 feet long, while another, now growing on the Black Spur, ten miles

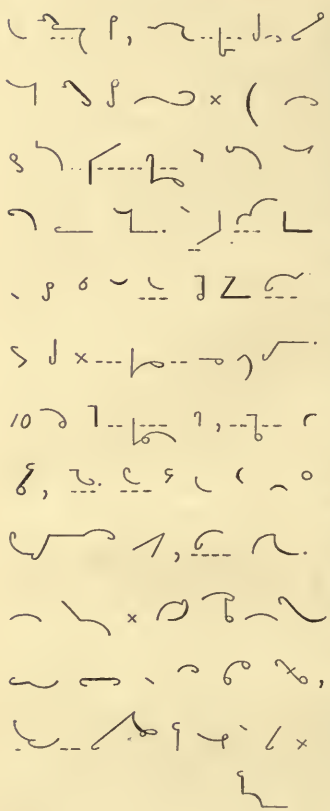


from Healesville[1], is 480 feet high. These measurements, you see, are far ahead of the California trees, one of the largest, that I think is known as 'The Father of the Forest', only[2] measuring 435 feet, and being 110 feet in circumference at the base. The one called 'The Mother of the Forest' measures 320 feet in height with a circumference at the base of 90 feet. When they felled the famous 'Traveler', in 1853 (and, by the way, every man that had a hand in it ought to have been sent to Dry Tortugas[3]), it took five or six men nearly a month to bring it to the ground, and they had all kinds of tools to work with, pump augers, wedges, and everything you could think of."

LEISURE HOURS.



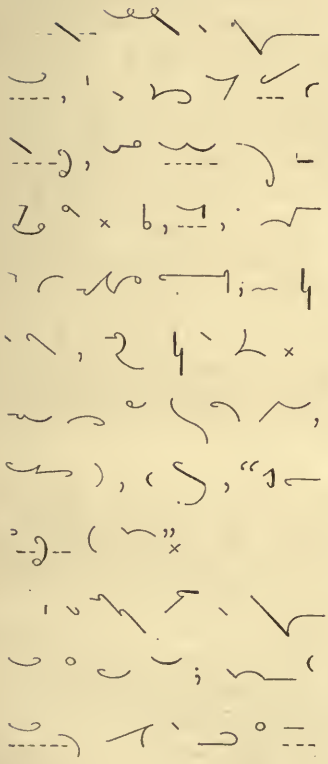
Two men stood at the same table in a large factory in Philadelphia, working at the same trade. Having an hour for their nooning every day, each undertook to use it in accomplishing a definite purpose; each persevered for about the same number of months, and each won success at last. One of these mechanics used his daily leisure hour in working out the invention of a machine for sawing a block of wood into almost any desired shape. When his invention was complete he sold the patent for a fortune, changed his workman's apron



for a broad-cloth suit, and moved out of a tenement house into a brown stone mansion. The other[1] man spent an hour each day during most part of a year in the very difficult undertaking of teaching a little dog to stand on his hind feet and dance a jig while he played the tune. At last accounts he was working ten hours a day at the same trade, and at his old wages, and finding fault with the fate that made his fellow-workman rich, while leaving him poor. Leisure minutes may bring golden grain to mind as well as purse, if one harvests wheat instead of chaff.

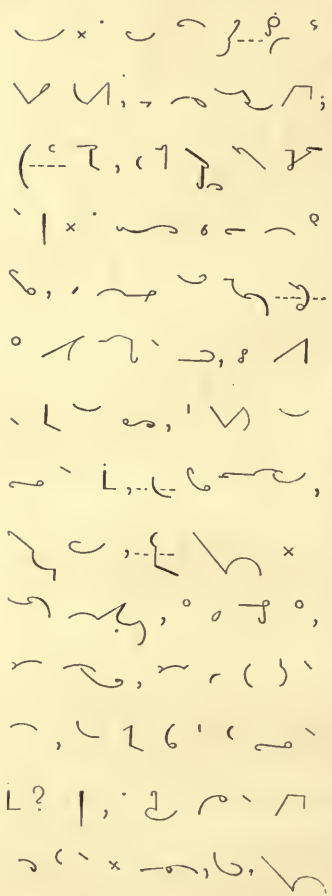
—*Wide Awake.*

LOVE OF APPLAUSE.

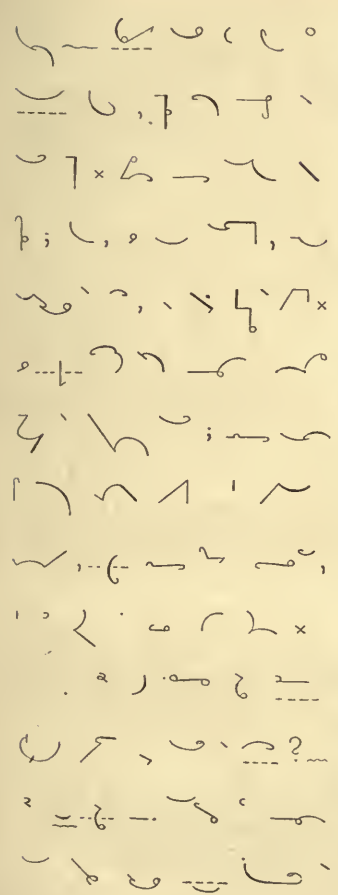


To be insensible to public opinion, or to the estimation in which we are held by others, indicates anything rather than a good and generous spirit. It is, indeed, the mark of a low and worthless character;—devoid of principle, and therefore devoid of shame. A young man is not far from ruin, when he can say, without blushing, "I do not care what others think of me."

But to have a proper regard to public opinion is one thing; to make that opinion our rule of action is quite

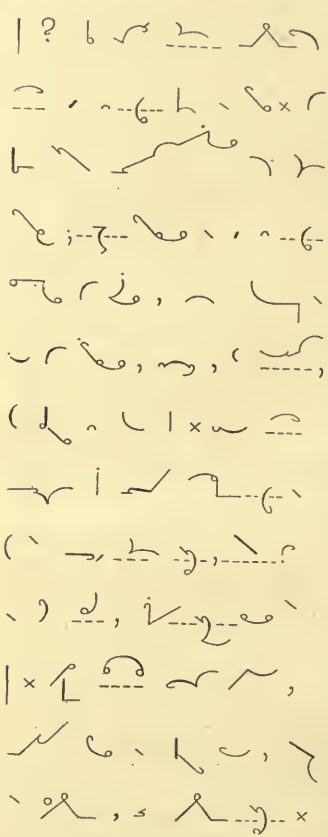


another. The one we may cherish consistently with the purest virtue and the most unbending rectitude; the other we cannot adopt without an utter abandonment of principle and disregard of duty. The young man whose great aim is to please, who makes the opinion and favor of others his rule and motive of action, stands ready to adopt any sentiments, or pursue any course of conduct, however false and criminal, provided only, that it be popular. In every emergency, his first question is, what will my companions, what will the world think and say of me if I adopt this or that course of conduct? Duty, the eternal laws of rectitude are not thought of. Custom, fashion, popular



favor—these are[1] the things that fill his entire vision, and decide every question of opinion and duty. Such a man can never be trusted; for, he has no integrity, and no independence of mind, to obey the dictates of rectitude. He is at the mercy of every casual impulse and change of popular opinion; and you can no more tell whether he will be right or wrong to-morrow, than you can predict the course of the wind, or what shape the clouds will assume.

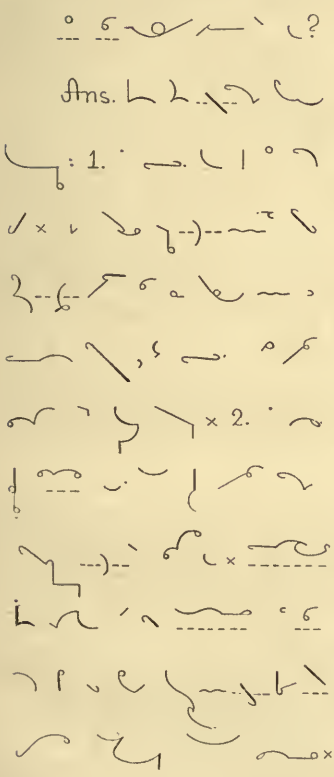
And what is the usual consequence of this weak and foolish regard to the opinions of men?—What the *end* of thus acting in compliance with custom in opposition to one's own convictions of



duty? It is to lose the esteem and respect of the very men whom you thus attempt to please. Your defect of principle and hollow-heartedness are easily perceived; and though the persons to whom you thus sacrifice your conscience, may affect to commend your complaisance, you may be assured, that inwardly, they despise you for it. Young men can hardly commit a greater mistake than to think of gaining the esteem of others, by yielding to their wishes, contrary to their own sense of duty. Such conduct is always morally wrong, and rarely fails to deprive one, both of self-respect, and of the respect of others.

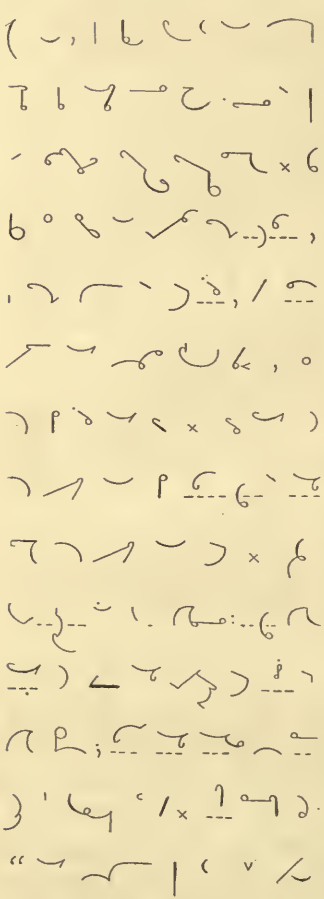
—*Hawes.*

SALT.

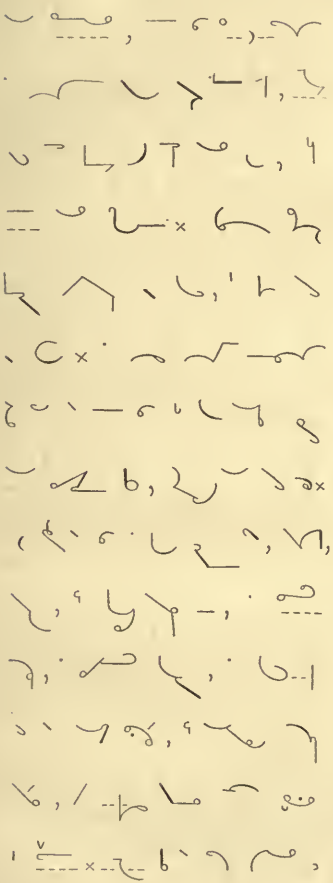


Question.—Is salt a necessary article of food?

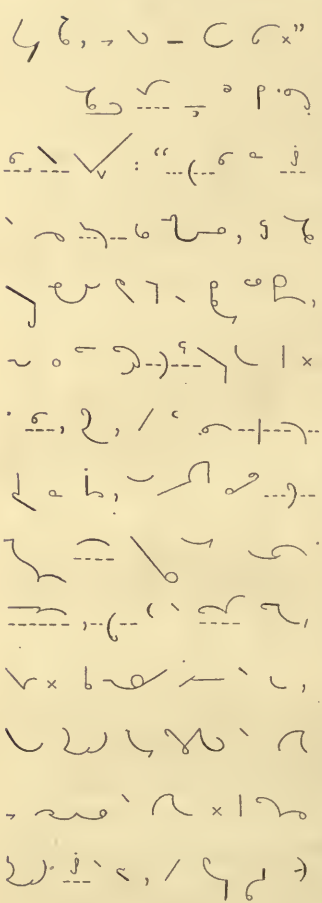
Answer.—It may be assumed to be from the following facts: 1. The craving for it is very general. But the opponents to its use—and we believe there are those who regard salt as a poison—would claim, probably, that the craving is the result simply of a vitiated appetite. 2. The most distressing symptoms ending in death result from the protracted use of saltless food. Criminals condemned to live on bread unmixed with salt are said to have suffered fearfully—to have been devoured by worms engendered in their stomachs.



On the other hand, it does not follow that in moderate quantities it is injurious because a long course of diet on salt-preserved provisions produces scurvy. This disease is supposed not to result from the use of the salt, but from the lack of potash compounds, which seem required in the muscles and flesh-juice, as are soda compounds in the blood. Plants near the sea are richer in soda, while those of inland growth are richer in potash. This will afford a useful hint for health-seekers[1], those living near the sea should go inland to replenish the potash constituents of a healthy system; while the inland invalids may seek the seashore or vicinity with advantage. Dr. Scudder says: "In the milk diet that I recommend

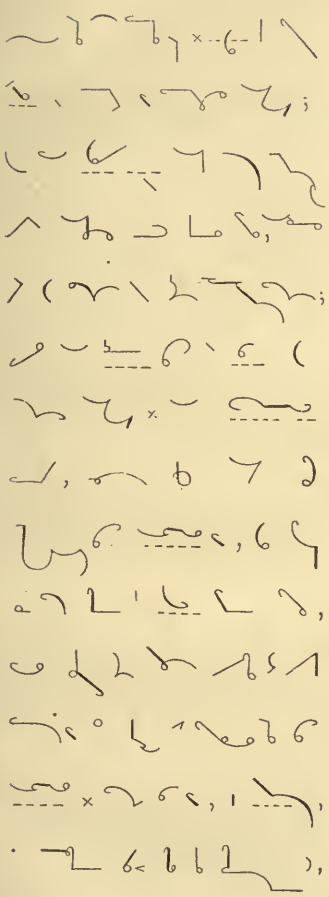


in sickness, common salt is used freely, the milk being boiled and given hot, and if the patient cannot take the usual quantity in his food I have it given in his drink. This matter is so important that it cannot be repeated too often, or dwelt upon too long. The most marked example of this want of common salt I have ever noticed has been in surgical disease, especially in open wounds. Without a supply of salt the tongue would become broad, pallid, puffy, with a tenacious pasty coat, the secretions arrested, the circulation feeble, the effusion at point of injury serous[1], with an unpleasant watery pus, which at last becomes a mere sanies or ichor. A few days of free allowance would

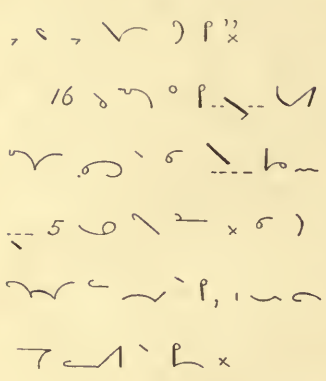


change all this, and the patient get along well."

In this connection[1] I will quote what is said concerning salt by Pereira: "Though salt is a constituent of most of our foods and drinks, we do not, in this way, obtain a sufficient supply of it to satisfy the wants of the system, and nature has accordingly furnished us with an appetite for it. The salt, therefore, which we consume at our table as a condiment, in reality serves other and far more important purposes in the animal economy than that of merely gratifying the palate. It is a necessary article of food, being essential for the preservation of health and the maintenance of life. It forms an essential constituent of blood, which fluid doubtless owes



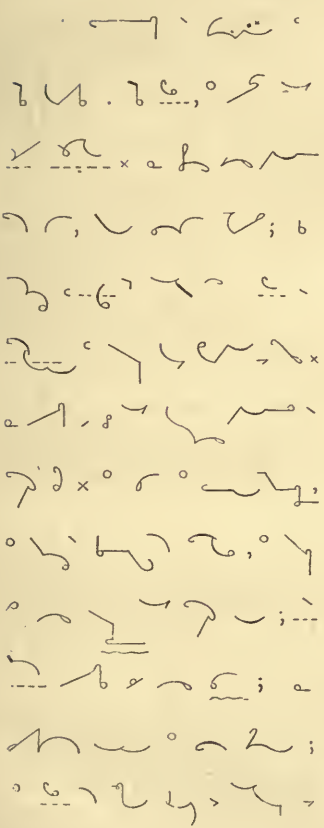
many of its important qualities to it. Thus it probably contributes to keep the blood corpuscles unchanged; for when these are put into water a powerful and rapid endosmose action takes place, in consequence of which they swell up and assume a globular form; whereas in a weak solution of salt they remain unchanged. In malignant cholera, and some other diseases in which there is a deficiency[1] of the saline ingredients of the blood, this fluid has a very dark or even black appearance, whence it has been assumed by some writers that the red color of the blood is dependent on the presence of its saline ingredients. From the salt of the blood, aided by water, the gastric juice derives its hydrochloric acid,



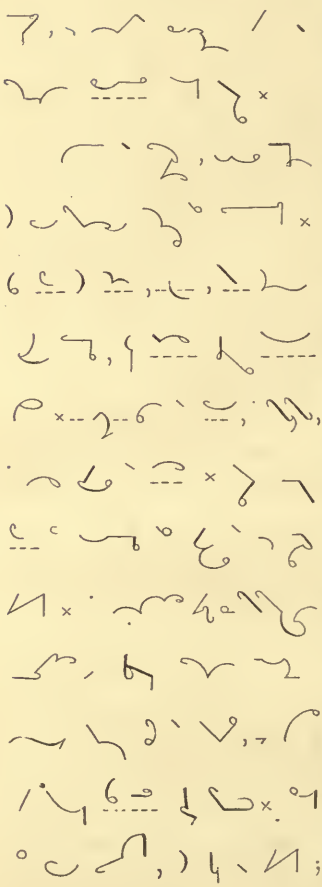
and the blood and the bile their soda."

Sixteen pounds a year is said to be the average yearly consumption[1] of salt by adults—about five ounces per week. Salt was formerly called muriate of soda, but now more commonly chloride of sodium.

LAMARTINE.

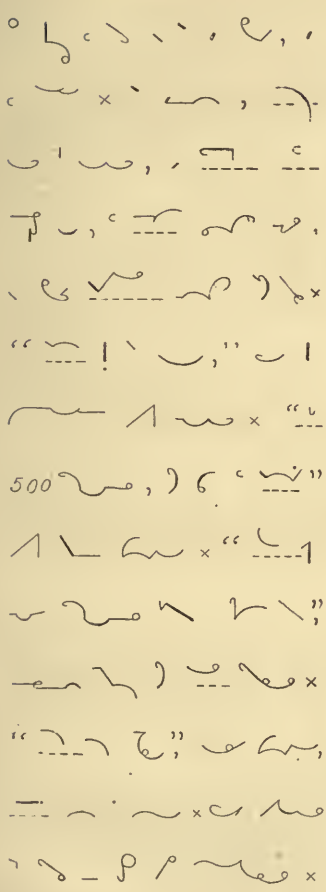


The character of Lamartine[1], with all its virtues and all its faults, is revealed[2] in the history of his life. As a statesman he must rank very low, being simply a theorist; but his errors were those of a noble mind filled to overflowing with pity for the suffering and oppressed. As a writer he stands in the foremost ranks of French authors. His style is glowing and picturesque, his powers of description are marvellous, his poetry is the most *poetical*[3] in the French language; of all her writers he has the most *soul*; as a story-teller no one is more charming[4]; his faults are a strong tendency to the inflated and the

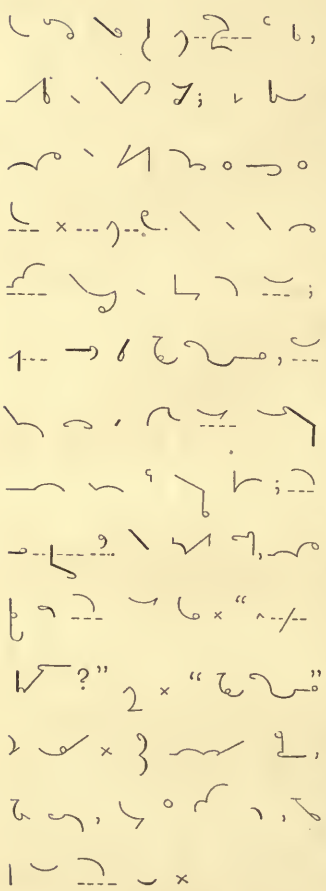


exaggerated, to a morbid sentimentalism which too frequently sinks into bathos.

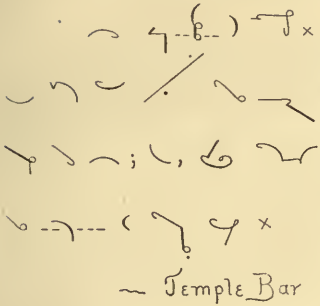
Like[1] all Frenchmen, intense egotism was one of the prominent errors of his character. This fault was redeemed, however, by so many noble and shining qualities, that it almost disappears in their lustre. He was the soul of honor, the bravest of the brave, the most generous of men. Pages could be filled with anecdotes of his gentleness of heart and boundless charity. The emoluments which he derived as a member of the Provisional Government he distributed freely and unasked among the poor authors of Paris, and the letters which accompanied these gifts doubled the obligation. Sunday, his only holiday, was devoted to charity;



his doors were open to all who suffered, who were in want. All who came, whether known or unknown, he greeted with extended hand, with kindly smiles and words, to soften the bitterness and humiliation of their position. "I am dying of hunger," one day laconically wrote an unknown. "I have five hundred francs, they are yours with all my heart," wrote back Lamartine. "If I had a hundred francs I should be truly happy," exclaimed a poor author in his presence. "Here are a thousand," answered Lamartine, giving him the money. Only the revenues of a prince could sustain such munificence.

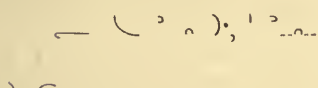


For years before his death he was overwhelmed with debts, and reduced to comparative indigence; but the divine impulse of charity remained as active as ever. He was saving up to buy himself a little pony-chaise to take the air in; he had gathered just a thousand francs, when a poor woman who lived in the neighborhood, came to him with a piteous tale; her goods had been seized by a hard-hearted creditor, and homeless destitution stared her in the face. "How much do you require?" he asked. "A thousand francs," was the answer. There was a momentary struggle, and then he went away, fetched his little hoard, and placed it in her hand.



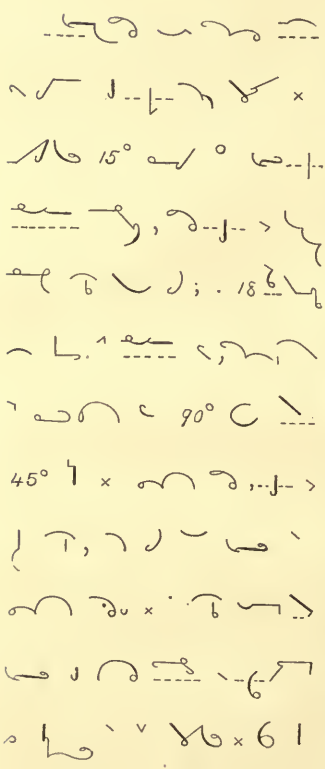
The man who could do these deeds was a Christian. No higher nor rarer praise can be bestowed upon him; for, generations frequently pass away without producing one such.

—*Temple Bar.*

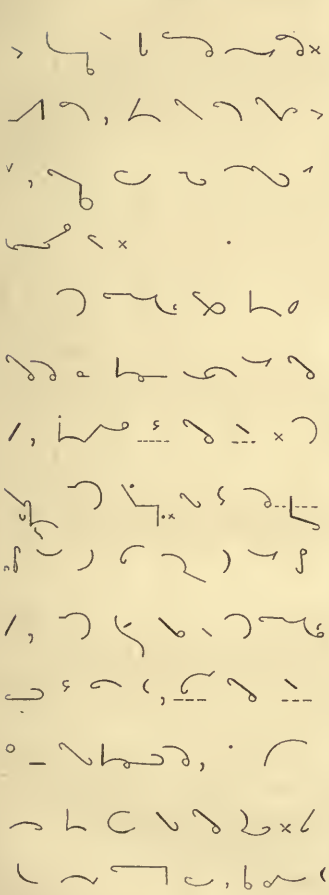


CARE for what you say, or what you say will make you care.

SCIENTIFIC MISCELLANY.

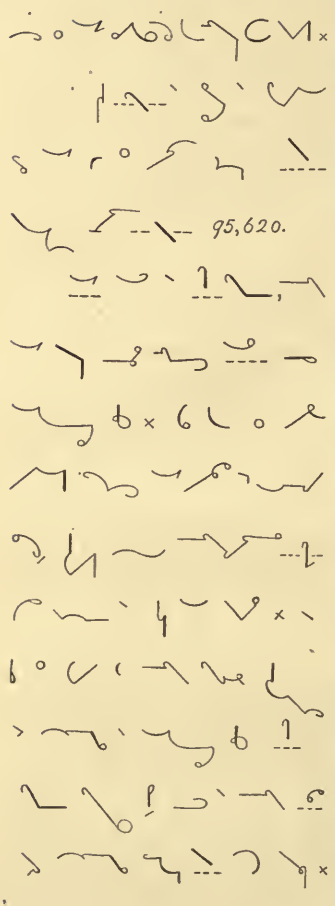


PHOTOGRAPHY of the stars now forms an important part of the work done at Harvard Observatory. A region of the heavens fifteen degrees square is photographed at a single exposure, stars down to the fifth and sixth magnitudes being shown; and eighteen of these pictures may be taken on a single plate, forming a map of a section of the stellar vault ninety degrees long by forty-five degrees wide. Smaller stars, down to the eighth magnitude, are shown in photographs of smaller areas. The magnitudes indicated by the photographs do not always correspond to those recorded as the determinations of eye observations. This is due



to the effects of different colors among the stars. A red star, which may appear very brilliant to the eye, produces only a faint impression on the photographer's plate.

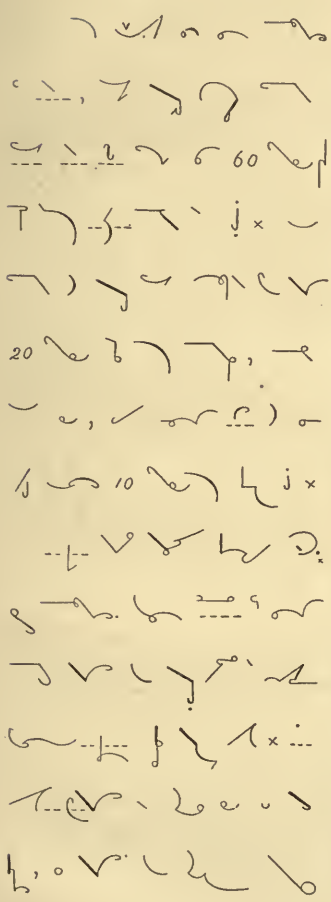
Mons. Cornevin places the time of the first appearance of the horse as a domestic animal in the bronze age contemporaneous with the bronze bit. Mons. Pietrement and Mons. Pictet proved that the horse had been utilized in Asia while Europe was in the stone age, and Mons. Faure objects to Mons. Cornevin's conclusion with the remark that, while the bronze bit is good proof of the domestication of the horse, the latter may have been tamed long before bronze was known. Whichever view may be the correct one, it is certain that



man has enjoyed the services of the horse for a pretty long period.

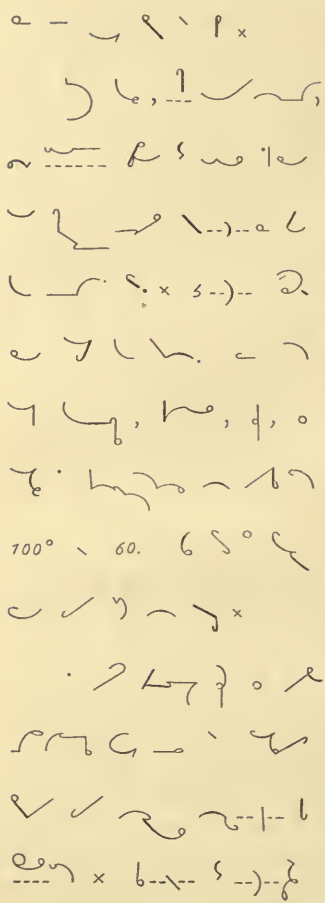
THE total number of species of flowering plants in the world is roughly estimated by Bentham and Hooker to be 95,620.

IN the opinion of Dr. Burg, copper in the body exerts a protective influence against infectious diseases. This view has received renewed confirmation in the results of an inquiry concerning the death-rate among copper-workers during the last epidemic of typhoid in Paris. To test his theory that copper prevents the development of the microbes of infectious diseases, Dr. Burg proposes studying the action of copper salts upon the microbes cultivated by Mons. Pasteur.



HERR HEINRICH has made some experiments with peat, in which he obtained the largest crop when the peat derived from the soil sixty per cent. of the total quantity of water which it was capable of containing. No crop was obtained when the moisture of the peat fell below twenty per cent. of its water capacity, except in sand, where a small yield was secured which contained no more than ten per cent. of the water it could have contained.

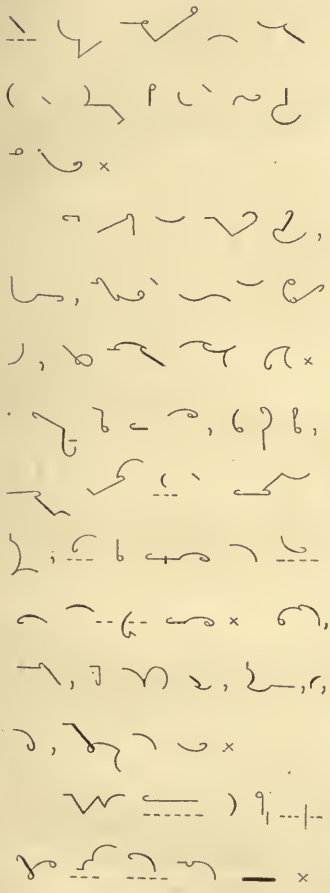
AT the Paris Observatory Admiral Mouchez has been experimenting for some weeks with a small captive balloon for obtaining records of meteorological phenomena at some distance above the earth. The real value of the balloon to science has not yet been determined, as ballooning for scientific purposes



is a quite new subject of study.

An Irish physician, Dr. Henry Macaulay, has made the unique suggestion that the intense heat of the sun in tropical countries be used as an agent for cooling buildings. He would use Muchot's sun-engine for pumping cold air into factories, dwellings, etc., as in this way the temperature of the rooms may be reduced from one hundred degrees to sixty. This plan is available only where ice may be obtained.

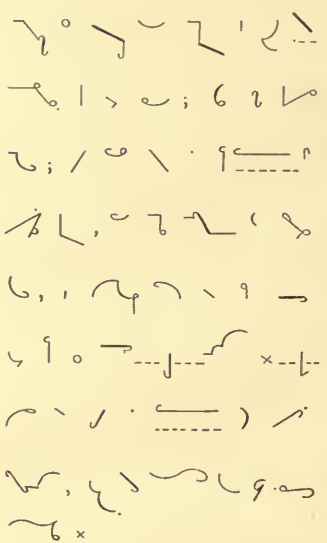
The Russian Geographical Society has received a list of the localities along the coast of northeastern Siberia where human beings may be found at different seasons of the year. It is hoped that the use of this list



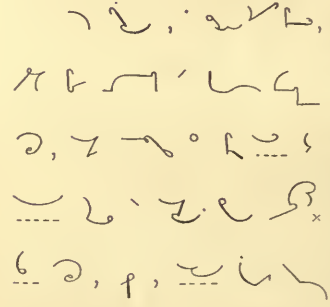
by future explorers may enable them to escape the sad fate of Lieut. De Long and his companions.

ACCORDING to a writer in a Parisian journal, Tonquin, a province of Anam in south-eastern Asia, possesses a remarkable mineral wealth. The production of its gold mines, this authority states, can be made to rival that of California and Australia; while its coal mines are even more important than the gold mines. Silver, copper, and tin are also abundant, and zinc, lead, iron, and bismuth are known.

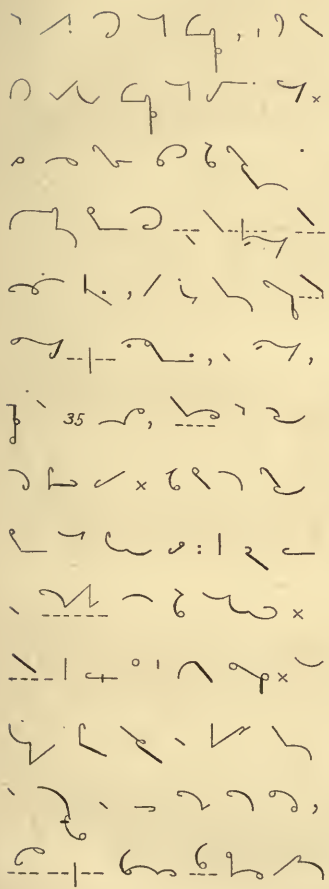
A PERPETUAL clock was started at Brussels a little over a year ago.



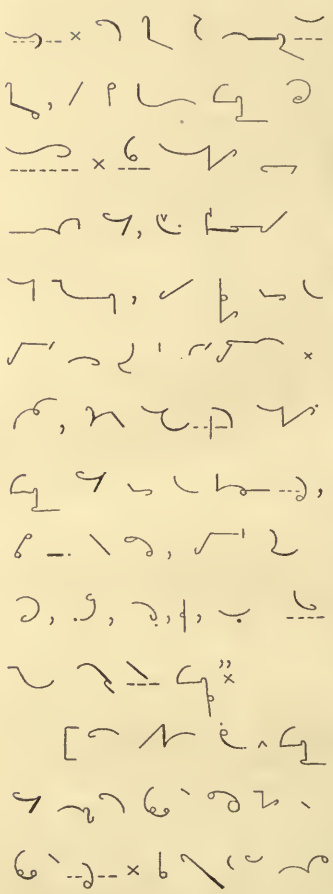
An up draught is obtained in a tube or shaft by exposing it to the sun; this draught turns a fan; which winds up the weight of the clock till it reaches the top, when it actuates a brake that stops the fan, but leaves it free to start again after the weight has gone down a little. At the last of June the clock was running perfectly, after having been in motion for nine consecutive months.



Herr Brunner, the superintendent of the Austrian Telegraphs, recently delivered a lecture on dynamo-electric machines, in which he expressed his deliberate opinion that the entire science of engineering is being revolutionized. These machines, he said, not only convert the power

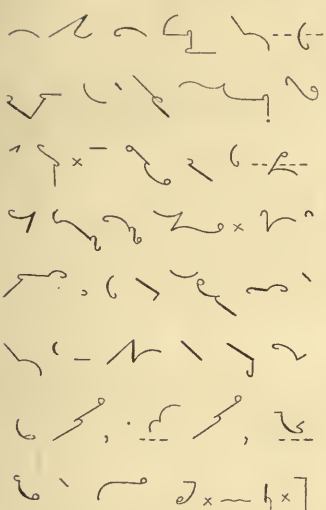


of a rotating machine into electricity, but they are able also to reconvert electricity into working energy. As the most perfect solution of this problem the lecturer spoke of the machine put up at Munich by Marcel Deprez, which conveyed the power produced by a steam engine at Miesbach, to Munich, a distance of thirty-five miles, by means of an ordinary iron telegraph wire. On this subject Herr Brunner spoke in the following words: "It would be difficult to over-rate the importance of this invention. By it coal is, or will be, superseded. In future it will be possible to turn the power of waterfalls to account from the very source, whilst at this moment these streams run away



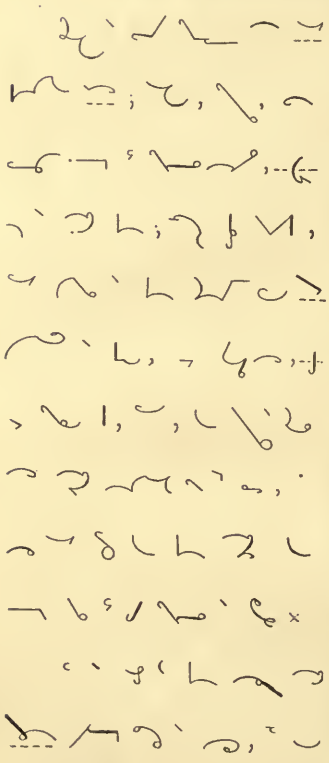
unused. Every drop of them may be gathered up in turbines which set dynamo-electrical machines in motion. These in their turn carry the accumulated energy, *via* a telegraphic wire, into a factory, where it is turned to account for working the main shaft or lighting the work-room[1]. Lastly, there will be nothing out of the way in turning electrical energy to account for domestic uses, such as getting up stairs, working a sewing machine, washing, ironing, etc., nay, even a piano might be played by electricity."

[We may readily conceive how electrical energy may be derived from thousands of sources and turned to thousands of uses. It is probable that wind-mills



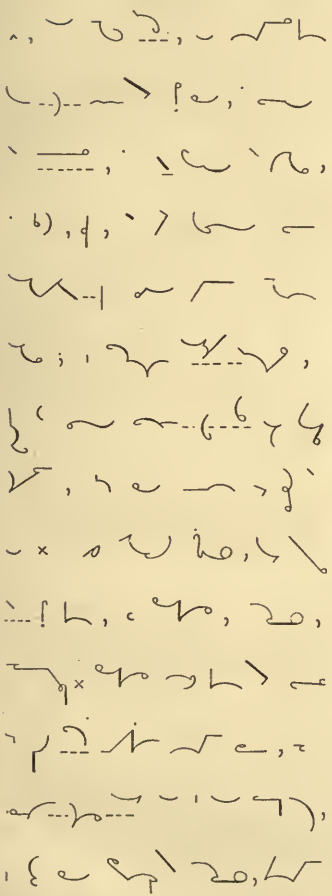
may originate more electrical power than would be required for all possible manufacturing operations on the planet. Quite superfluous would be then as much more[1] energy that might be derived from draughts in chimneys. Utterly beyond requirement would then be the inconceivably great amount of power that could readily be obtained from the vast rivers, the little rivers, and even the waves of lakes and oceans.—A. J. G.]

THE MEASUREMENT OF TIME.

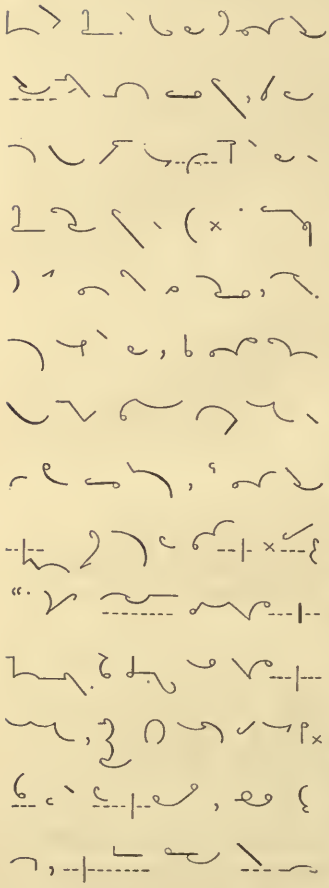


There is nothing of greater practical importance in the daily life of men; nothing, perhaps, more closely connected with the progress of the human race, than the art of measuring time; and from that distant period when the lapse of time was marked only by the alternations of day and night, and the changes of the moon, down to the present day, when, for purposes of science men measure the millionth part of a second, the improvements in the appliances for time-measurement have kept pace with the general progress of civilization.

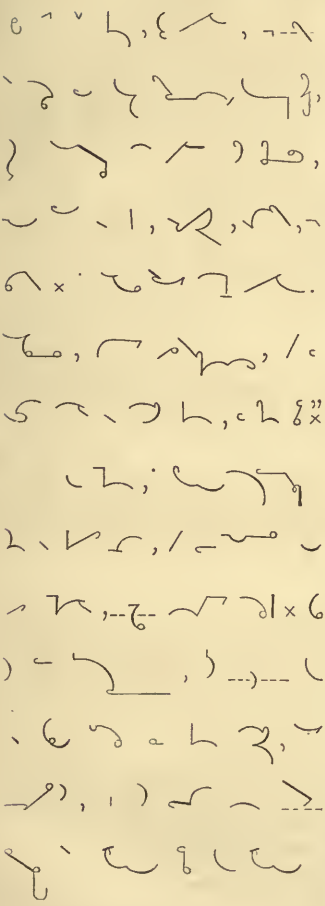
We all understand that time must be measured by some regular series of motions, and we know



how, in a fashion of her own, nature marks time for us—by the setting of the sun, the crowing of cocks, the budding and falling of leaves, the tides of the sea, etc., all of which phenomena occur invariably at certain regular and familiar intervals; but very early in the history of our race it was found that something more accurate than these natural changes was required, and art soon came to the assistance of nature. The first artificial contrivances for the purpose of telling time were sun-dials, hour-glasses, and clepsydræ. Sun-dials measured time by the course of a shadow over a rudely marked scale, and were consequently useless in the night or in cloudy weather, but they were soon supplemented by hour-glasses, which marked

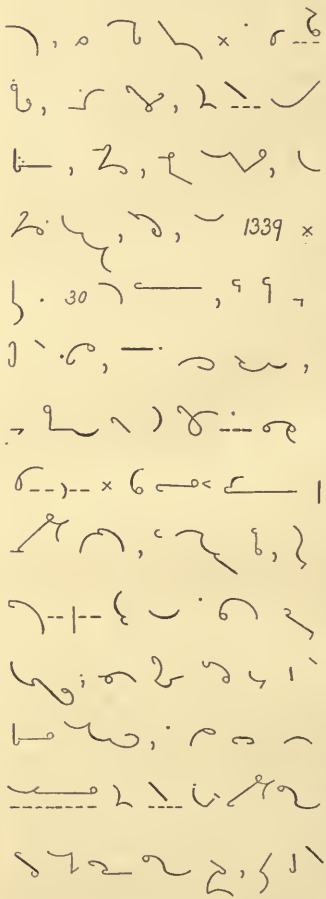


time by the trickling of fine sand through a small opening between an upper and lower glass bulb, just one hour being required for the whole quantity of sand to trickle from one bulb to the other. The clepsydra was on the same principle as the hour-glass, employing water instead of sand, its simplest form being an upright cylinder large enough to hold several gallons of water, with a small opening at the bottom through which[1] the water flowed slowly out. We are told that "the Assyrian monarch, Sardanapalus, had a time-keeper of this description in his palace at Nineveh, and there was one also in every ward in the city. These were all filled at sunrise, and as soon as they were emptied, at a given signal by a man

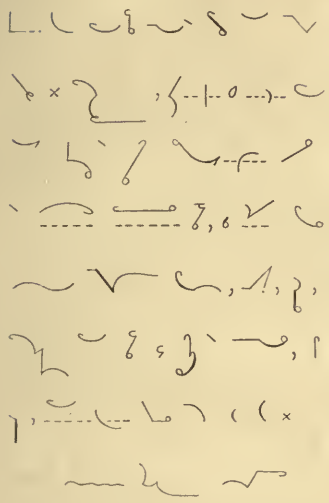


stationed upon a high tower, they were refilled, and a number of heralds went forth[1] proclaiming the fact through the town, so that the inhabitants might regulate their transactions, and know when to eat, to worship, to labor, and to sleep. The intervals between the emptying and refilling in this case, like the rounds of the patrolmen, which were also anciently employed to measure time, were termed watches."

After a time, the flowing water of the clepsydra was made to turn a wheel[2], which carried an index hand round a dial plate, and thus marked the hours of the day. This was called a water-clock, and was used for two thousand years as a time-measurer, in the countries of the east, but was gradually improved by the substitution of falling weights for falling



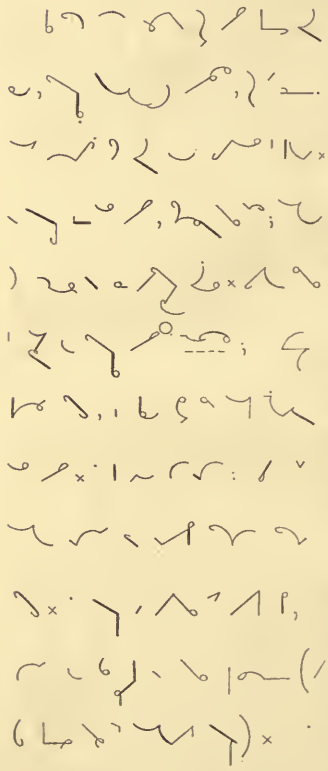
water, as the motive power. The oldest of these constructions, actually preserved, was made by Henry De Vick, a German, and set up in Paris, for Charles V., of France, in 1339. It was a thirty-hour clock, with a weight and a train of wheels, giving motion to one hand, and the striking part was precisely the same as that still used. This curious old clock had a horizontal lever, with movable weights, so that the further out they were hung the slower would be the vibrations; and some three hundred years after the date of De Vick's invention, the last grand improvement in clocks was made, by converting the horizontal swing[1] of the balance into the vertical swing of the pendulum, which was done by



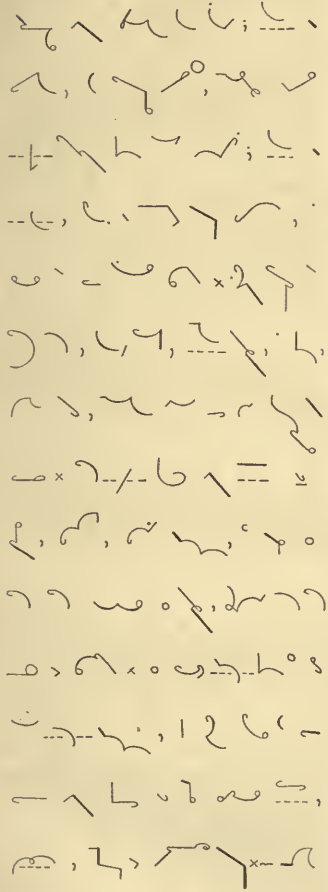
taking off one of the weights and hanging the balance in an upright position. From this clock, which was at first used only in the towers of churches, sprang the whole race of modern clocks and watches, whose history fills many a bulky volume, reaching, as it does, from the time when watches were the treasures of kings, till to-day, when few pockets are without them.

—*Scientific American.*

HOW TO SLEEP.

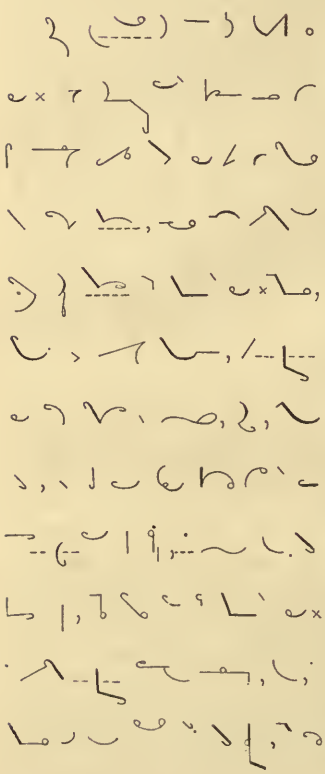


It is very important to sleep so that the rest shall be sound, producing beneficial results, so that on waking in the morning there shall be no weariness or discomfort. To obtain a good night's rest there must be peace of mind; nothing so hardens the bed as a reproachful conscience. Heavy suppers, or indigestible food, produce restlessness and nightmares; alcohol dulls the brain, but does not soothe the spirit into a comfortable night's rest. The head should not lie too low; just high enough to allow the blood to recede freely from the brain. The body should repose on the right side to allow the food that is digested to pass out of the stomach (which then takes the position of an inverted bottle). The



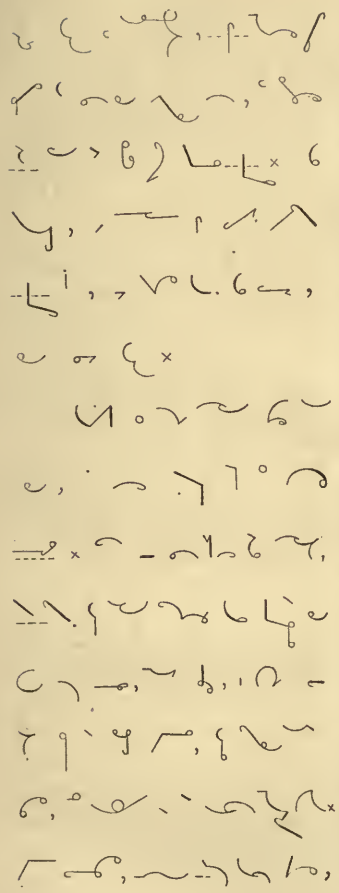
bedclothes should be just enough for comfort; if too heavy, they produce restlessness, and indisposition to rise at the proper time in the morning; if too few, failing to keep the body warm, the sense of cold hinders sleep. There should be plenty of fresh air, having the window, and, if possible, the door, left open, and never on any account let the fireplace be closed. Very much attention should be given to having a[1] suitable, well-lighted, well-aired[2] bedroom, with bedstead as free from hangings as possible, so as to allow the air free access to the sleeper. As one-third of our time is spent in our bedroom, it therefore follows that great care should be taken to have all its surroundings clean, wholesome, and adapted to the requirements of the body.—*Good Health.*

SAND.



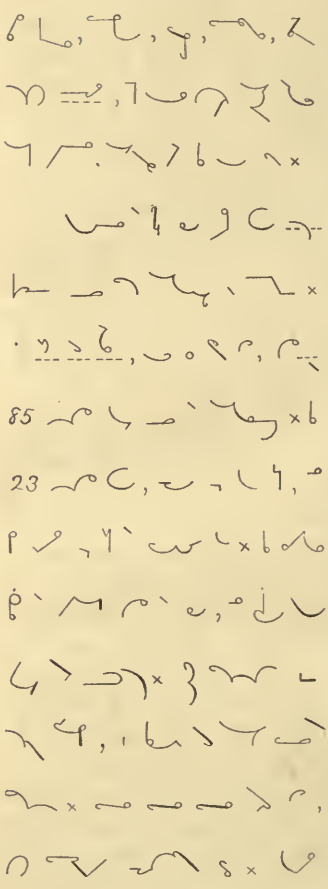
There are few things so common and so varied as sand. An old sea-captain nearing the Atlantic coast will tell exactly where he is by the sand which the lead brings up from the bottom; and once an important robbery in Prussia was traced by means of a bag of sand. A box of treasure, belonging to the Royal Bank, which had been sent from Berlin to Munster, was found, on being opened, to contain one thousand dollars less of gold coin than when it started, the money having been taken out and its place filled with a bag of sand. The robbery had been skilfully executed, for, the box showed no signs of having been disturbed, and all efforts

LAWYER
DALLAS, TEXAS



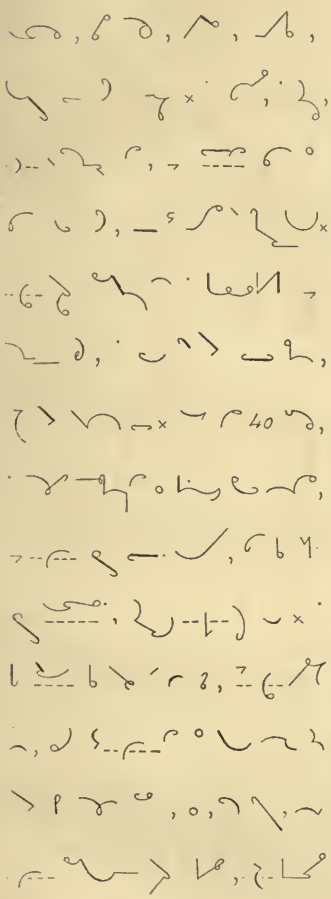
to find the thief were unsuccessful, until a famous geologist suggested that some of the sand should be sent him, with specimens of that near all the stations through which the box had passed. This being done, he quickly told where the robbery had been committed, and the police, having this clue, soon secured the thief.

Varied as are the minor elements in sand, the main body of it is always quartz. We may get some idea of the amount of this mineral, by remembering that it not only forms the vast deposits of sand along our coasts, and in the deserts, but also the great underlying strata of sandstone rocks; that it is present in all soils, and is necessary to all animal and vegetable life. Rock crystals, and many of our favorite jewels,

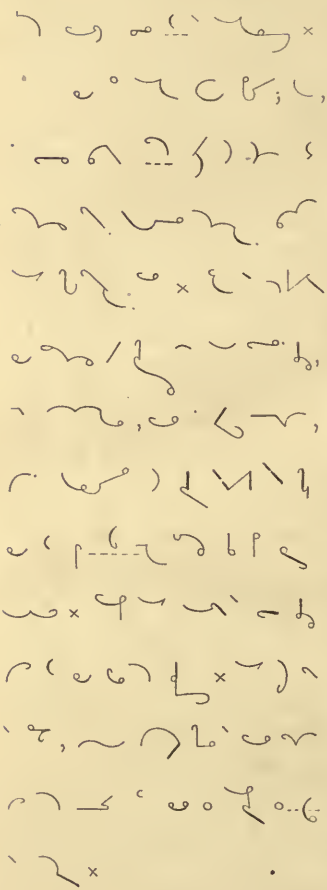


such as topaz, chalcedony, blood-stone, chrysoprase, and jasper are also quartz, and it enters largely in the shape of veins into rocks, in the composition of which it has no part.

Banks of drifted sand stretch along our Atlantic coast from Newfoundland to Cape Cod. The highest point of these, known as Sable Island, lies about eighty-five miles off the coast of Nova Scotia. It is twenty-three miles long, and one and a half wide, and is said to rise to a height of one hundred feet. Its surface consists of rounded hills of sand, and is continually being changed by the action of the weather. There was formerly a good harbor on one side, but it has now been entirely closed by a storm. Coarse grass grows upon the island, and also cranberry and whortleberry plants. Various

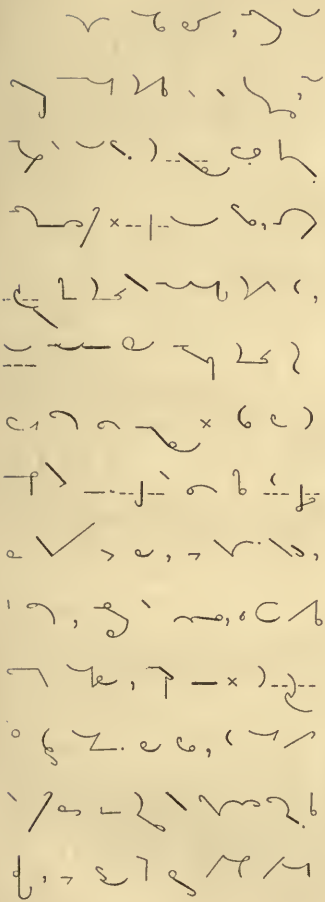


animals, such as horses, rabbits, and rats, have been carried there and naturalized. The walrus, or sea-horse, used to frequent the island, and the Greenland seal is still found there, together with the shells of tropical fish. Thus upon this sand-bar meet the denizens of the torrid and the arctic zones, the one brought by the Gulf Stream, and the other by the Polar Current. In the last forty years, the western extremity of the island has diminished seven miles, and the whole has been growing narrower, while its height has been increasing, especially at the eastern end. The difference between its position on old charts, and on those recently made, shows that the whole island is being moved eastward by the steady westerly winds, as, very probably, may be the whole sandbank upon which it rests, although it covers

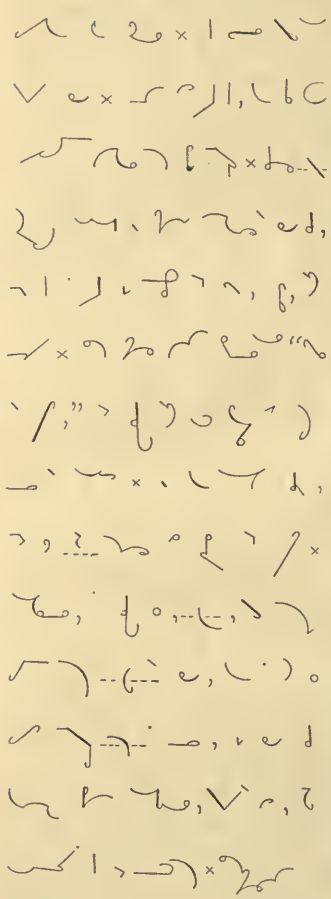


an area one-third as great as that of Nova Scotia.

Sand is never long stationary; for, the grains slip over each other so easily that the firmest appearing banks are moving slowly in the direction of the prevailing winds. We have all heard of the terrible sand-storms which travelers meet in crossing deserts, and of Memphis, once the Egyptian capital, lying for centuries so deeply buried by drifted sand that until within a few years its site has been unknown. Nor is it in the neighborhood of great deserts alone that sand-floods are destructive. In the eastern part of Scotland, many large tracts of once fertile land are covered with sands as unstable as those of Arabia.

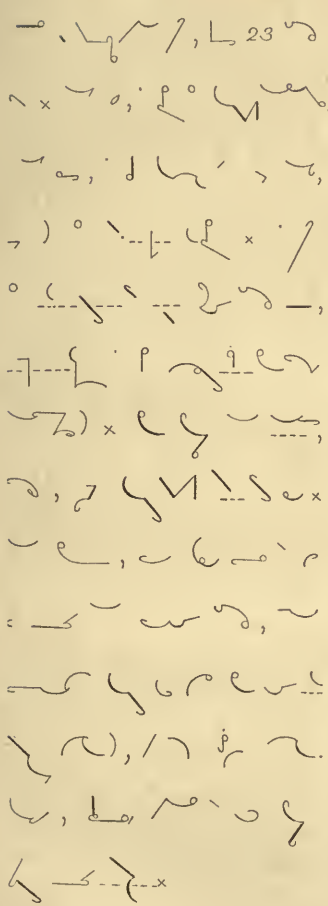


Early it this century, a parish in Aberdeen county was reduced to two farms, and not a vestige of any of the buildings was to be seen, unless it might be a fragment of the church. At another place, a large and valuable tract was covered by an inundation so rapid that, in a single season an apple-tree was covered so that only the very summit could be seen. This flood was caused by the cutting down of some trees that had served as a barrier to the sand, and the pulling up of the bent, or star, a species of mat-grass, whose long roots creep into the sand, and bind it together. So useful is this plant in checking sand-floods, that in the reign of George II. an act was passed by Parliament forbidding its destruction, and the planting of it has been earnestly recommended

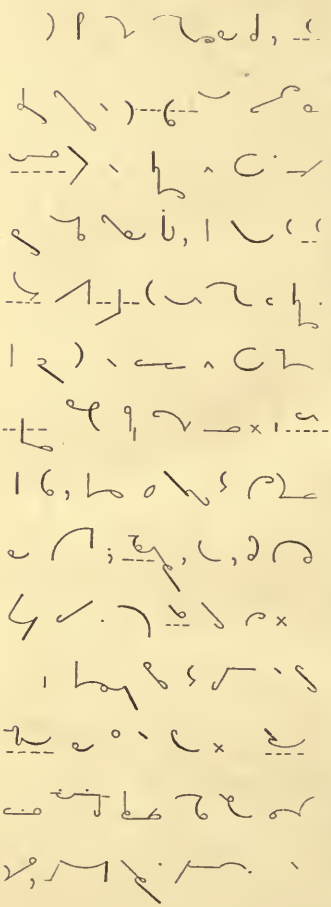


wherever a flood threatens. It grows best in pure sand. Cattle will not touch it, for its long, rush-like leaves are stiff and pointed. It seems to be especially intended to control the movements of sand dunes, and to it the Dutch owe the existence of a part, at least, of their country.

Sir Charles Lyell speaks in his "Principles of Geology," of the destruction of three ancient villages on the eastern coast of England. Two have entirely disappeared, and of the third all that remains is the steeple of a church. In this case, the destruction has, however, been rather the work of the water than of sand, for the sea has worn and beaten away the coast, but the sand dunes have moved steadily in advance, burying the land, and then uncovering it to the action of the water. Sir Charles Lyell

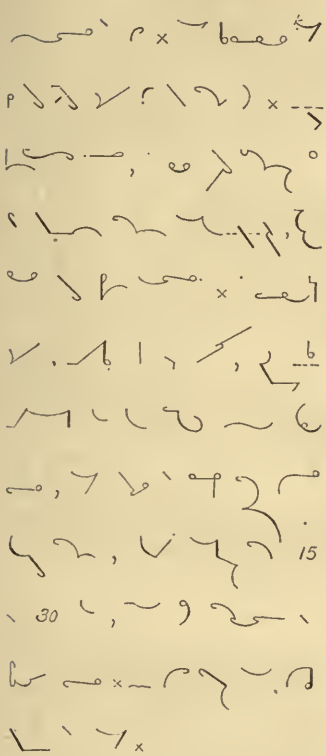


gives two pictures of the ruined church, taken twenty-three years apart. In the first, the steeple is half buried in sand heaps, and in the second, the dunes have moved on to the inland[1], and the sea is beating at the foot of the steeple. The church is thought to have been[2] built about three hundred years ago, and at that time the site must have been considered safe from the encroachments of the sea. Several villages in England, France, and Jutland[3], have been buried by blown sand. In Suffolk, one thousand acres of land were covered in one hundred years, and in Cornwall have been found hills several hundred feet above the level of the sea, which are constantly moving forward, disclosing the ruins of ancient villages which have been covered by them.



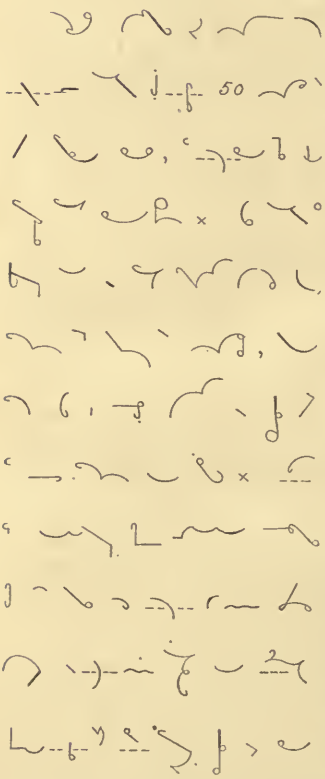
So steady are the movements of the sand dunes, that it has been proposed to use those in Holland as an index by which[1] to determine how long the country has been in its present condition, it being thought that if the rate at which they now move were determined, it would be easy to calculate how long a time had passed since they started from the coast. But in order to do this, it must first be proved that the line of the sea-coast has not altered, and that is not possible, for, there is always change where water beats upon land.

But it must not be supposed that the work of blown and drifting sand is all evil. Between Eccles and Wintecton it has closed the mouths of several small estuaries, and rendered possible the reclaiming of

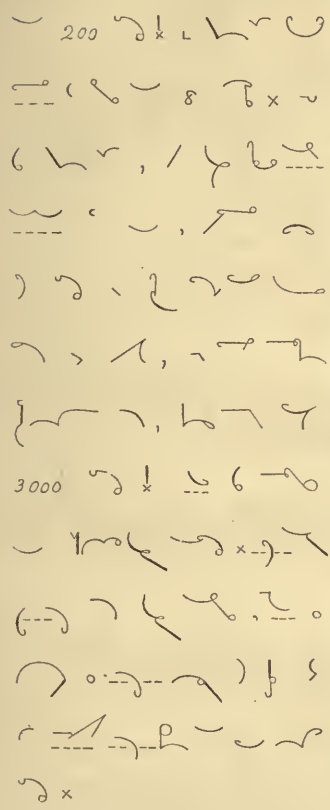


many acres of land. In the days of the Saxons, Norwich[1] stood upon an open estuary leading up from the sea. About the time of the Norman Conquest, the sands upon which Yarmouth is built became firm enough to be habitable and they have since been steadily increasing. The closing[2] of the wide estuary, and reducing it to a river, shut back the tides, and rendered fit for cultivation many thousand acres, in which upwards of sixty fresh-water lakes have been formed, varying in depth from fifteen to thirty feet, and in size from one acre to twelve hundred acres.—*Ellen Bertha in Alden's Book of Knowledge.*

THE MILKY WAY.

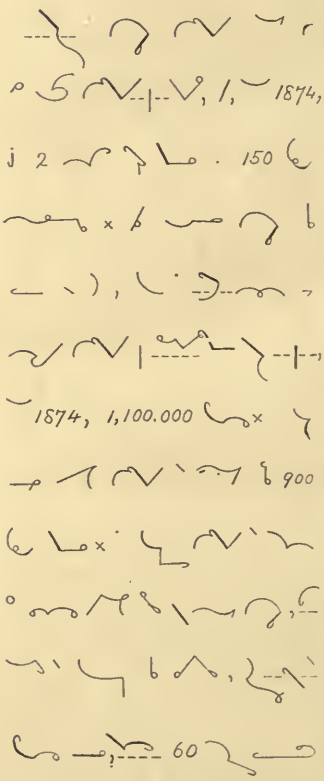


Herschel's labors showed the Milky Way to be a great nebula[1] containing at least fifty millions of huge[2] blazing suns, with our sun and its attendant planets near the center of the system. This nebula is distributed in two nearly parallel layers having the form of a pair of millstones, being very thin but extending laterally to distances of which we can form no conception. While with an uninterrupted track a lightning express train might pass around our world—which seems large to us—in less than one short month, it could not at its highest speed accomplish the distance to the sun

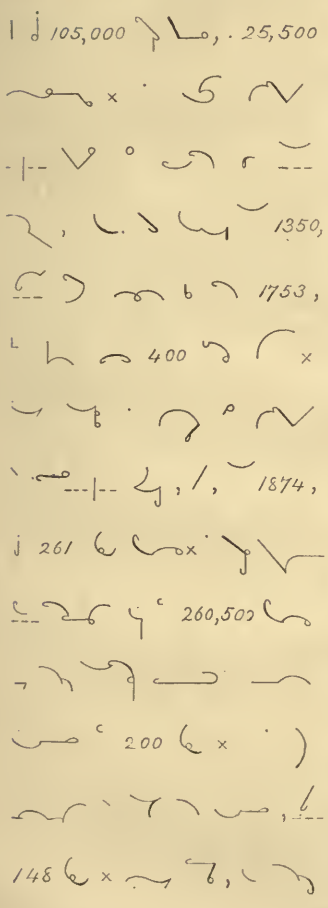


in two hundred years! But a beam of light flashes across that space in eight minutes. And yet this beam of light, which vastly[1] transcends[2] in speed anything, we know, requires more than three years to travel from the nearest fixed star to the earth, and to cross the extreme width of the Milky Way it must occupy nearly *three thousand years!* Even this expresses no idea of the limits of the visible universe. Other nebulæ than our own are visible in space, and if as large as our own must be so distant that the light cannot reach our system in *one million years!*

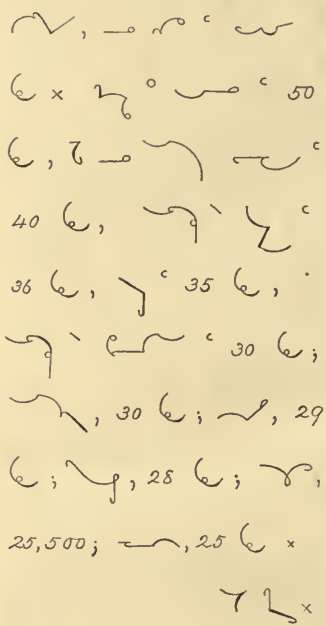
LIBRARIES.



By far the largest library in the world is the National Library at Paris, which, in 1874, contained 2,000,000 printed books and 150,000 manuscripts. Which is the next largest it is difficult to say; for, the British Museum and the Imperial Library at St. Petersburg both had, in 1874, 1,100,000 volumes. After them comes the Royal Library of Munich[1], with its 900,000 books. The Vatican Library of Rome is sometimes erroneously supposed to be among the largest, while in point of fact it is surpassed, so far as the number of volumes goes, by more than sixty European collections.



It contains 105,000 printed books, and 25,500 manuscripts. The National Library at Paris is one of the very oldest[1] in Europe, having been founded in 1350, while the British Museum dates from 1753, or a time more than four hundred years later. In the United States[2] the largest is the Library of Congress at Washington, which, in 1874, contained 261,000 volumes. The Boston Public followed very closely after it with 260,500 volumes, and the Harvard University collection came next with 200,000. The Astor and Mercantile of New York are next, each having[3] 148,000. Among the colleges, after Harvard's



library, comes Yale's with 100,000. Dartmouth's is next with 50,000, and then comes in order Cornell with 40,000, the University of Virginia with 36,000, Bowdoin with 35,000, the University of South Carolina with 30,000; Ann Arbor, 30,000; Amherst, 29,000; Princeton[1], 28,000; Wesleyan, 25,500; and Columbia, 25,000.

—*New York Tribune.*

NOTES.

[*The Sections referred to in the Notes are of the revised Hand-Book, unless otherwise stated.*]

Page 5.

[1] *Almost.*—How is the position of this phrase-sign determined? See Sec. 245.

[2] *Learning.*—What is the general distinction as to the mode of writing *ing* in nouns and participles? Stating the best reasons you can for the difference of use. Sec. 112, Rem.

[3] *Such as the.*—Wherein is the form given in the engraving superior to Schays-Retoid.

[4] *Carthusian.*—How would the first syllable be vocalized? And where should the *u* be written? How would the *ia* be best written? Secs. 169, 108, 136.

[5] *Duties.*—Where should the *u* be written? Stating the rule. Sec. 106.

[6] *Derived.*—How might the first vowel be written? Sec. 169, 4.

[7] Under what rule is this phrase-sign made? How is the position determined? If the character is written through the line, why is it not reckoned as of the third position? Secs. 211, 209.

[8] *Qualifications.*—How should *wŏ* be written? What consonant is omitted in this *acs* outline? And why is it omitted? Secs. 169, 4; 235, 4.

[9] *Task.*—Where should the vowel be written? If not before the Kay, why not? Sec. 108.

[10] *Esteemed.*—What is the position of this word, and what rule determines the position? Sec. 219, 1.

[11] *Apart.*—How must the *ä* of this word be written? If not before the consonant sign, why not? Sec. 169, 1, *c*.

Page 6.

[1] *Monks.*—What is the proper vowel in this word, and where should it be written, and why? Sec. 106, 2.

[2] *Furnished.*—How is the first syllable vocalized? Sec. 169, 3.

[3] *Round the.*—State two good reasons for writing the *the* upward here (Retoid), instead of by Petoid.

[4] *Copyists.*—How can you best write the vowels expressed by the *yi* of this word? Sec. 129.

[5] *Fitted.*—How would this word be vocalized? What is its proper position, and how is it determined? Secs. 169, 219.

[6] *Intrust the.*—Why not write *the* upward here?

[7] *Skitt.*—How would this form be vocalized? State any good reason for considering it more legible than Skay-El (the old outline for such words as *skill, scate, school*)?

[8] *Requiring the.*—How is *ing* disposed of here? What expresses *the?* Sec. 113.

Page 7.

[1] *Distracted.*—How is the *r* expressed or implied here? Sec. 173.

[2] *Adjuration.*—How is the vowel *u* written with this form? Sec. 169, 4.

[3] *Hast.*—Where is the instruction for writing *has, were*, etc., instead of *hast, wert*, etc.? Page 312, Rem. 7.

Page 8.

[1] *Ethetwold.*—How is the downward direction of Weld justified here? Why is not the sign to be read *lnt?* Sec.

212, 2, showing that *shortening* to add either *t* or *d* applies.

[2] *Bibliographer.*—How are the vowels *io* best written here? Sec. 136.

PAGE 9.

[1] *Recent.*—What is the rule for writing the *r* here? Sec. 153, 2.

[2] *And was.*—What is the rule for writing *and* here? Sec. 71, Rem. 1.

[3] *A Fellow.*—As Ketoid for *a* could not be quite conveniently prefixed to Fel and Thel and their mates, use Tetoid instead; and, therefore, disjoin *or* preceding them.

[4] *An earnest.*—What is the rule for writing *r* here? Sec. 153, 3.

[5] *He.*—What is the rule for writing *he* in the *acs* (= advanced corresponding style) and in the *rs*? ☞ One of the very useful Standard-Phonographic characteristics, is the *h*-tick. Sec. 146, Rems. 4 and 5. The tick below the line, Chetoid[3], is used in the reporting-style for *how*. See *How* in the Standard-Phonographic Dictionary.

[6] The rule of Sec. 161, *b*, is conformed to here, for Shel does not stand alone; but the word *social* may be written by the reporter Iss-Shel even when alone, if he is particular to write the Shel more inclined than Shen would naturally be.

[7] What is the rule for representing *s* in such words as *science*? Sec. 58, 1.

[8] What is the rule for writing *r* in such words as *remained*, *room*, etc.? Sec. 153, 2.

PAGE 10.

[1] Why are *st* in this word represented by the Steh loop? Compare with similar words, as *step*, *state*, etc.

[2] The article *a-n* is generally joined with preceding words represented by a brief sign, Iss, Ses, Weh, Wuh, Yeh, Yuh, or tick or dash. Hence you will generally write the following phrases: of-a, to-a, or-a, but-a, on-a, should-a, and-a, is-a, as-a, has-a, with-a, were-a, what-a, would-a, beyond-a. This equalises the phrase-forms. ☞ But remember that, in other cases, *a* or *an* is almost always joined with a following word, while *the*, for greater distinctness, is almost always joined with the preceding word. For history of the Standard-Phonographic *a-n-d* tick, see page 41 of *Biographical Sketch of Dr. James W. Stone* (12mo, cloth, 25 cents; paper, 10 cents).

[3] *Rather than.*—How is *than* added here? Refer to the rule. What is the position of this phrase? How is the position of lengthened strokes determined? ☞ In the Old (or Ninth-edition) Phonography, the basis of Graham's improvements, only CURVE-signs were lengthened, to add ONLY *thr* (as in *their*). Graham made it the rule to add also *tr*, *dr*, and *thr*, giving license to lengthen Ing to add *kr* or *gr*. He extended the rule of lengthening also to straight lines *in the reporting style*, with an occasional highly useful trebling: as Wendher[2], *one (an)-other*; Wen·dherdher[2], *one (an) other their*; Chaydher[1], *each other*; Chay·dherdher[1], *each other their*; Raydher[2], *rather*; Ray·dherdher[2], *rather there* (or *their*). See under "DHR," p. 107 Standard-Phonographic Dictionary.

PAGE 11.

[1] *Manual.*—What would be the *cs* form for this word?

PAGE 12.

[1] What rule determines the position of this word? Sec. 245.

[2] See Note 6, Page 9 (on this page).

PAGE 13.

[1] *Horseshoes.*—What does the form for this word rudely resemble?

[2] *Artificial.*—Why is Ret in this word written above the line? Sec. 219, 1. How many positions are there in the *cs* for words that are not sign-words? Secs. 52, 53.

PAGE 14.

[1] *Printers.*—What is the position for this word, how is it determined, and what part of the word is assigned the position?

[2] *To your.*—What rule determines the position of this phrase-sign? Sec. 245.

[3] *Let it be.*—What rule determines the position of this phrase-sign?

[4] *Emperor.*—What is the rule for writing the two *r's* of this word? Sec. 153, 5.

[5] *Antoninus.*—What is the position of this word, and how is it determined? Sec. 219, Rem.

PAGE 15.

[1] Numbers are usually written by figures.

[2] Why is *il* here written by El? Sec. 156, 1.

[3] How may the *ăĭ* be expressed? Sec. 98.

[4] What is the rule for writing the vowel between Iss and Esh·on? Sec. 198.

[5] Net[2] being a word-sign for *nature*, under what instruction do you write the prefix *un* and the affix *ally?* Why should not the El come on the line? Page 245, 2, *a*, *d*.

[6] How is it best to write the two vowels *ĭā*. Sec. 136.

[7] How is the Sper to be vocalized for *-spire?* Sec. 169, 4.

[8] What is the real vowel here, and how is it expressed with the common vowel scale?

[9] How may *be* be added to *may?* And how is *their* added? Sec. 204, Rem. 3; Sec. 211.

[10] As *of the* is here preceded by a pause, it is written, and not implied by nearness.

PAGE 16.

[1] Give a good reason for here joining *an* with the preceding rather than the following word.

[2] What rule determines the position of this word? Sec. 246, 2.

[3] What determines the position of this phrase-sign? Sec. 245.

[4] Under what scheme, or principle, do you vocalize the three words, *curious, scholar, jealous?* Sec. 169.

[5] Iss-Rend being *surround*, why do you use the En-stroke for the *n* in *surrounded?* Sec. 212, Rem. 6.

PAGE 17.

[1] Under what instruction is Nel used for *nl* in the *acs?* See first page of the Introduction of this book.

[2] How are two vowels to be placed to one consonant stroke? Sec. 99.

[3] What is the second diphthong in this word, *Isaiah*, and how is it to be expressed? Sec. 98.

PAGE 18.

[1] What determines the position of this phrase-sign? Sec. 245.

[2] What is the rule for writing derivative word-signs, as *accounted* derived from *account?* Secs. 261, Rem. 2; 212, Rem. 6.

[3] Tetoid (for *a* in place of and implying *ing*) is better than Ketoid would be, because more variant from the direction of the stroke. Secs. 112–114.

PAGE 19.

[1] *Anterior.*—What is the form for this word in the *cs?* The *acs* represents the *t* here by shortening the *n*. The reporter drops the *rr*, writing the *ant* in the third position, thus distinguishing the word from Net[2], *nature*, and Net[1], *interior*. The engraving shows how to make the angle between the strokes of this word sharp, and therefore *easy;* namely, by making Net quite curved, and Ray-Ray quite slanting.

[2] *Century.*—This word also shows the same mode of making the junction, as

was spoken of in the preceding note. This form is the natural introduction to the reporting word-sign, Sent[2], for *century*.

PAGE 20.

[1] See Hand-Book, Sec. 80.

[2] See Hand-Book, Sec. 86.

[3] The best rule for the joining of the *and* tick is, to use the horizontal tick (Ket·oid) when convenient; otherwise use the perpendicular tick (Tet·oid). Before Fel, Vel, Thel, Dhel, Tel, Del, Chel, Jel, Tet·oid is necessarily or prefcrably used. Before Pel and Bel, Ketoid is easily used.

PAGE 21.

[1] *Through the day.*—In the *acs* the word-signs especially may be joined to their connected words.

[2] *Raving.*—The Ing stroke is usually the best sign for *-ing* in NOUNS (so that we may pluralize clearly by adding the circle) and in ADJECTIVES (so that we may join the adjective to its noun); while in present participles, the Ing-dot is usually best, so that we may write a following *a-n-d* or *the* in its place. But occasional exceptions occur, as in Bee[2]-Ing for *being* (the present participle as well as noun), and in Ref:'ing' for the adjective *raving* (also at times a noun; as "such *raving*"; also a present participle, as "was *raving*").

PAGE 22.

[1] *Johnson.*—Why is not this the simple circle here, and how do you know that it implies an En-hook? Sec. 187, Rem. 3.

PAGE 23.

[1] How may this word be shortened for *acs* and *rs*? Page 313, Rem. 16.

PAGE 24.

[1] Why should *d* be here expressed by Dee rather than by shortening? Sec. 216, 2. Why will it answer to express the *d* by shortening in *bodily*? Sec. 239, Rem. 2. In the *ars*, Bed[1] is a convenient word-sign for *body; everybody*, Ver[2]-Bed: *anybody*, En[1]-Bed; *nobody*, En[2]-Bed.

PAGE 25.

[1] The *acs* writer may join words (especially sign-words) when closely related, and if the junction is easy.

[2] What is the usual sign for *with* as a prefix, and what is its usual position? See, in the Standard-Phonographic Dictionary, *With*, p. 817; and compare and practice *withal*, Dhee[2]-Lay; *rws*, Dhel[1]; *withdraw*, Dhee[2]-Der (*rs* Dhee[1]-Der, that is, first position if deemed necessary); *within, ws*, Dhent[1]; *without, ws*, Dhet[3]; *withstand*, Dhee[2]-Stend (*rs*, do.).

[3] Pronounced on·wē.

PAGE 26.

[1] How, if thought necessary, could the *ie* be expressed? Secs. 136; 169, 4.

PAGE 27.

[1] How is *-bleness* or *-fulness* written? Sec. 232, 2. This disjoined sign may be regarded as the final Iss of the fully written affix.

PAGE 28.

[1] *Vigilance* is a good instance of an offset being used for a hook.

PAGE 29.

[1] What is the rule for joining the ī here? Sec. 101.

[2] How would this outline be vocalized? Sec. 169, 3.

[3] Here the elongation of the "circle" is to imply the El-hook.

[4] What is the rule for writing concurrent vowel signs? Sec. 99.

PAGE 30.

[1] How should *wĕ* be written to read between the consonants of Tel here? Sec. 169, 4.

[2] For adding *are* or *our* by the Ar-hook, see Sec. 178, Rem. 5. See under *Are* in the Standard-Phonographic Dictionary.

PAGE 31.

[1] Or, in the *acs* the Ray may be omitted from *pu'pose* and its derivatives.

PAGE 33.

[1] How is the large circle vocalized? See. 65.

[2] What is the rule for joining *ou* here? See. 101.

[3] *In* is a preposition, on which depends the object—*a very short time.*

[4] How is *-ble* written when Bel cannot be conveniently employed? See. 232, 1.

PAGE 36.

[1] *Perspire.*—Write r with one stroke (the second) of the angle through Sper, to have it read between the *p* and *r*.

PAGE 37.

[1] *Cleanliness.*—Observe how the Kel runs up slightly, to compensate for the downward En-hook; and how only as much of that is made as will join with the Lay; that is an offset is used instead of the complete hook.

PAGE 38.

[1] *Which cannot be* is as natural a phrase in writing as in speech.

[2] *Is not*—what? *Is not brought;* and not simply *brought,* but *brought out.*

[3] The preposition *in* has for its object here *a very few minutes.* It is convenient to break the phrase up, thus: *in-a-very few-minutes.*

PAGE 40.

[1] *You are.*—Occasionally, as here. Ray is a more convenient sign for *are,* than its usual sign Ar.

PAGE 41.

[1] Which side of the Telt should the vowel-circle be placed? See. 169, 1, *b.*

[2] Derivatives are generally written on the basis of the primitive, as *carbon,* Ker-Ben; *carbonate,* Ker-Ben-Tee.

PAGE 42.

[1] Here, lapping instead of joining saves us from the long form, Ens-Ith-Tee-Kay. Making a distinct angle between Thet and Kay would be more troublesome than the lapping.

[2] Omitting the *n* from this word, secures an easy form, instead of the full form, Dee-En-Tee-Kel.

PAGE 43.

[1] Use Tetoid for *a-n-d* before Tel, Del, Thel, and Dhel, because more easily joined than Ketoid.

[2] The author's plan for *-ing the* suggested the affix-sign for *-ingly,* the heaviness serving to distinguish the latter from the former. Sec. 232, 5.

PAGE 44.

[1] *Pre* is written disjoined, in order to keep the ordinary form for *historic.*

PAGE 45.

[1] Remember that Ret—"the first stroke not horizontal"—is to be written in the required position.

PAGE 46.

[1] A slight offset answers for the El-hook in this word.

[2] As Fel cannot be used easily here for *-fully.* the primary consonant signs for *f-l* are used instead.

PAGE 47.

[1] For representation of *ia* see Sec. 136.

PAGE 50.

[1] *Wound* (=*woond*) is distinguished by this form from *wound* (to wind), which is written by Wend.

PAGE 52.

[1] How is the vowel written to read between the *f* and *l* of *filth* and the *t* and *r* of *starts*?

[2] Observe how the angle is shortened here by greater curvature than usual of Ned and greater slant than usual of Red.

PAGE 53.

[1] To make the junction easy, make an offset simply for the En-hook.

[2] *Throughout the world.*—The *the* is best dropped here as interfering with the easy writing of a familiar phrase, and as readily supplied.

PAGE 54.

[1] *Notorious.*—To make the angle easy here, make the curve more curved than usual, and make the Ray quite slanting.

[2] How is the *wau* of the first syllable written?

PAGE 59.

[1] As the Ketoid for *a* would make with the following word in this case a poor junction, it is joined rather with the preceding word, *said*.

PAGE 61.

[1] Shorten the Dee, to express the second consonant; then, that the shortened letter may be clear, make a slight angle between that and the following En.

PAGE 62.

[1] *Heales* is here best written with Els (instead of Lay), so that we may add *ville* with its customary sign Vel.

[2] In the *acs* it is well to use the *rs* Mel, Nel, and Rel, in words in which they are convenient.

[3] *Drī Tŏrtu·gaz.*—How should you write the vowel of *Tor*, to show that it is to be read between the *t* and *r*? If you do not feel perfectly conversant with any principle as it occurs in practice, make it a point to thoroughly study it. In this way, you will become a good phonographer. The same principle of study in everything is very important. Refer, as imperfect knowledge or ignorance suggests the need, to some good dictionary (as the Standard-Phonographic Dictionary, *when you do not feel positive as to an outline* of a word you are writing), or to some good encyclopædia, as Chambers', Appleton's, or Zell's.

PAGE 64.

[1] *The other* may be written (by the *acs* or *rs* writer) Dheedher[2]—a form harmonizing with Endher[2], *another*.

PAGE 67.

[1] Here Ray (instead of Ar) is used for *are*, to secure an easy junction in the writing of the phrase.

PAGE 70.

[1] The simple circle is turned in the most convenient way; when turned the other way something *more* than *s* or *z* is naturally implied, as, in this case, an Ar-hook.

PAGE 71.

[1] *Serous* = thin, watery; like whey.

PAGE 72.

[1] Writing under to imply *con-m*, as in the *rs* may be used by the *acs* writer in convenient cases.

PAGE 73.

[1] To make this combination (Dee-Ef-Shay) regard it as a double-size Dee-shon[3]; to which add En-Es.

PAGE 74.

[1] See Sec. 204, Rem. 4.

PAGE 75.

[1] *Lamar·tēn·*.—How is accent noted in Phonography? See "Punctuation," etc., Secs. 78–86.

[2] Why is not shortened Lay made heavy when adding *d*? Sec. 213, Rem. 4.

[3] See Sec. 80.

[4] There are in this page four good illustrations of the writing of *ing*, in nouns and adjectives, by Ing-stroke, rather than Ing-dot: *overflowing, suffering, glowing, charming.* The present participle more naturally uses the Ing-dot; as, "was overflowing, suffering, glowing, charming."

PAGE 76.

[1] A frequent grammatical error is the use of *like* for *as*. The sentence should have commenced, "As with all Frenchmen."

PAGE 88.

[1] Better forms for compound words (and sometimes for phrases) are secured by expressing their consonants in the briefest manner, instead of simply joining the forms of the component words; as in Wer-Ker-Em, *workroom;* Tlent[1], *itwillnot.*

PAGE 89.

[1] A slight offset is here used for Ar-hook of Mer.

PAGE 92.

[1] Observe that *through* joins *which* without an angle. Make Ther-Chay and contrast it with Therdher, and learn thus to distinguish them.

PAGE 93.

[1] That is, *fo'th*. In the *acs* and *rs* it is convenient to omit the *r*, especially in those cases where we have heard the words pronounced without the *r; fo'th, lea'ning, mo'ning.*

[2] The Way-hook is here made by an offset, the pen running backward a little on the *a*-tick.

PAGE 94.

[1] To make this outline most easily, keep on the heaviness from the middle of Way to the middle of Ing, making a smooth junction instead of an angle.

PAGE 97.

[1] See Secs. 201, Rem. 4; 112–114.

[2] As the natural form for *aired* (Ard) will not join easily with *well*, Red is substituted.

PAGE 105.

[1] *Land* is here written downward because making a sharper and easier angle with *in* than would be made by the customary form for *land*, Lend.

[2] Written Bee[3] = *to be* plus En-hook for *n* of *been*, the *have* being readily supplied (as frequently by the advanced writer) before *been* or *done.*

[3] To make better room for the vowel of *Jut*, write *'land* downward.

PAGE 106.

[1] It is a general principle of phrase-writing to join to a preposition its object; as here join *which* to *by;* to *in* in the next line join the dependent *its* (part of the object of the preposition); in the next line, to *at* join *which.*

PAGE 107.

[1] *Nor* [=north] plus *wich* [=vicus, a village], usually pronounced Nor·ij.

[2] In nouns *-ing* is generally best written with the Ing-stroke.

PAGE 108.

[1] *Nebula*, the Latin word for *cloud*, is applied in astronomy to groups of suns, somewhat corresponding to archipelagos.

[2] *Huge* is primarily written h-ū-j; that is, Jay, vocalized with ū, aspirated with the *h*-dot. In the *rs* it is best written Retoid-Jay[3], the Retoid being the *h*-tick, and serving to distinguish *huge* from Jay[3], large.

PAGE 109.

[1] See Sec. 236, 3.

[2] See Sec. 236, Rem. 1.

PAGE 110.

[1] *Munich.*—This vowel is produced by the synchronous utterance of ĕ and ōō. It is represented by a parallel dash in the first place.

PAGE 111.

[1] As the termination *est* is usually written by Steh loop, it is desirable to use the loop in some such words as *oldest, hardest,* although the vowel ĕ can not be written; but it can readily be supplied.

[2] To have, as is desirable, a phrase-form for this term, the form for *States* (Steh-Tees) is changed to the joinable form Iss-Tets. Why not always write *States* by Iss-Tets? Because the word *state* as to form naturally goes with *step* (Steh-Pee), *stitch* (Steh-Chay), *stuck* (Steh-Kay), and because Steh-Tee can be shortened to Steh-Tet for *stated.*

[3] The advanced writer may cultivate the *rs* habit of adding *have* by the Vee-hook when convenient.

PAGE 112.

[1] Though *prince* would properly be written by Prens, we here use the Ens-stroke as better joining with Ten = *ton* (= town).

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